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April 2, 2020

Mr. Tom Alo
San Diego Regional Water Quality Control Board
2375 Northside Drive, Suite 100
San Diego, CA 92108-2700

Subject: Revised Alternative Cleanup Levels Report for the North Campus/Parcel H-3
Rohr, Inc., North Campus Facility
850 Lagoon Drive
Chula Vista, California

Dear Mr. Alo,

AECOM Technical Services, Inc. (AECOM) on behalf of Rohr, Inc. (Rohr), a Collins Aerospace Systems Company is providing this revised technical analysis with respect to alternative groundwater cleanup levels for the North Campus and Parcel H-3, which is located adjacent to Rohr North Campus Facility (North Campus) in Chula Vista, California (Figures 1 and 2). This document incorporates revisions to address comments from the Regional Water Quality Control Board dated November 12, 2019.

Groundwater containing volatile organic compounds (VOCs), primarily trichloroethene (TCE), has migrated from the North Campus westward to Parcel H-3 and other off-site areas. The San Diego Port District (Port) will be working with a developer to redevelop Parcel H-3 as a hotel/convention center facility. The Regional Water Quality Control Board San Diego Region (RWQCB) is in the process of developing a Cleanup and Abatement Order (CAO) for the North Campus/Parcel H-3 with a requirement that groundwater remediation will commence in Parcel H-3 prior to the start of construction of the proposed development.

As part of the pending CAO, Rohr will need to provide the RWQCB with an analysis of alternative cleanup levels for groundwater beneath the North Campus and Parcel H-3 that contain chemicals of concern (COCs) from the North Campus. Specifically, the required technical analysis is included in this document to evaluate whether or not it is technologically and economically feasible to clean up the discharges in a manner that promotes attainment of background water quality conditions in groundwater. If not, the technical analysis shall propose alternative cleanup levels less stringent than background that comply with Resolution No. 92-49.

This Alternative Cleanup Levels Report (Report) will address the feasibility of remediating groundwater to background conditions for the North Campus/Parcel H-3 groundwater assuming general presumptive remedies that are appropriate for this setting and situation and compared to reasonable time frames for completion. Background conditions for the North Campus/Parcel H-3 groundwater are presented in the Background Soil and Groundwater Report for the North Campus (AECOM, 2019a). This Report will present a technical analysis based on the precedence of

regulatory approvals for similar sites and the complicating effects of back diffusion and heterogeneity on achieving background levels in groundwater.

Similar alternative groundwater cleanup levels were developed and approved for the Former South Campus Facility, which is located immediately adjacent to the North Campus (Figure 2) and was part of the larger Rohr Chula Vista facility; the COCs and lithologic are similar at both of these sites (AECOM, 2019a). As documented in the Groundwater Remedial Action Plan Addendum, Former South Campus (Haley and Aldrich, 2016), Haley and Aldrich concluded that it was infeasible to achieve background levels (essentially, non-detect concentrations) for VOCs in groundwater at that site and proposed alternate cleanup levels for these compounds that are protective of human health and the beneficial uses of groundwater. For the South Campus, Haley and Aldrich proposed the more stringent of human health risk goals, drinking water Maximum Contaminant Levels (MCLs), and California Toxics Rule (CTR) criteria for shallow (Zone A) groundwater and the more stringent of MCLs and CTRs for deeper (Zone B) groundwater. The CTR criteria were applicable for point of compliance monitoring wells located adjacent to the Chula Vista Marina.

The analysis used in this Alternative Cleanup Levels Report follows the same technical approach and processes for determining the feasibility of cleanup to background levels that was used for the South Campus. These proposed cleanup levels were used as part of the development of the March 2020 Parcel H-3 Remedial Action Plan (RAP) to evaluate and recommend groundwater remedial alternatives for implementation. The RAP included a Feasibility Study (FS) component that identified remedial alternatives that can be implemented at Parcel H-3 to reduce the COC concentrations in groundwater consistent with the pending CAO requirements (see Presumptive Remedial Technologies section below). Although this document focuses on groundwater conditions for Parcel H-3, the analysis is generally applicable to groundwater conditions site-wide for the North Campus.

CONCEPTUAL SITE MODEL SUMMARY

North Campus and Parcel H-3 are located within the La Nacíon Subunit of the Sweetwater Hydrologic Unit. Designated beneficial uses of groundwater in the La Nacíon Subunit include municipal, and industrial, and agricultural uses; however, groundwater in the vicinity is not suitable for these beneficial uses without treatment because of elevated total dissolved solids.

The chemicals of concern (COCs) for Parcel H-3 are those chemicals that are present in groundwater at the North Campus, are mobile in groundwater systems, and have migrated westward beneath Parcel H-3. Chemicals detected in groundwater at the North Campus include chlorinated VOCs primarily TCE and its breakdown products, 1,1,1-TCA and its breakdown products, 1,4-dioxane, and hexavalent chromium (AECOM, 2019b). TCE has been detected most frequently and at the highest concentrations, and its distribution is representative of overall groundwater impacts.

Groundwater containing TCE, other VOCs, and 1,4-dioxane are present with the aquifer systems underlying Parcel H-3 and extend towards the Chula Vista Marina. The concentrations of VOCs in Zone A groundwater are below or near MCLs at most locations, and the underlying VOC plumes are “confined” below shallow fine-grained units. In Upper Zone B, TCE concentrations exceed 1,000 micrograms per liter (μg/L) over the majority of Parcel H-3 and locally exceed 10,000 μg/L. 1,4-

Dioxane concentrations locally exceed 1,000 μg/L but are substantially lower elsewhere on Parcel H-3. Based on the presence of degradation products, reductive dichlorination and abiotic degradation are important mass-removal mechanisms for chlorinated ethenes and ethane in groundwater; however, given the abundant presence of silt/clay layers in contact with the VOC plumes, back diffusion of VOC from these silts/clays along flow paths is expected to sustain VOC concentrations and extend remedial time frames. Hexavalent chromium has been detected infrequently in groundwater at Parcel H-3 and is not a significant COC for this area.

Potential human health risk receptors include future construction workers, hotel workers, landscapers, and hotel guests/recreational receptors. Potential exposure routes include ingestion, inhalation, and/or dermal contact with soil, soil vapor, and shallow groundwater.

The VOC and 1,4-dioxane plumes extend to the Chula Vista Marina and San Diego Bay. The influence of tidal fluctuations, which cause lateral reversals in flow direction near the shore, enhances mixing and dispersion of the plumes in these areas. This enhanced mixing/dispersion causes attenuation of the plume concentrations, particularly in the near-shore areas where reduced concentrations of VOCs/1,4-dioxane occur in groundwater that discharges to surface water. Nevertheless, potential future receptors in Chula Vista Marina and San Diego Bay include recreator/fishermen, in-water commercial workers, and aquatic organisms. Potential exposure routes for these receptors include ingestion of aquatic organisms, incidental ingestion of seawater, and dermal contact with seawater.

Further discussion of the conceptual site model for Parcel H-3 is presented in the Conceptual Site Model Report, Parcel H-3 and Offsite Areas, dated October 30, 2019 (AECOM, 2019b).

PRESUMPTIVE REMEDIAL TECHNOLOGIES

The approved remedial approaches for Parcel H-3 include a combination of in-situ chemical reduction, enhanced in-situ bioremediation, monitored natural attenuation, and engineered controls (AECOM, 2020). Similar remedial approaches are anticipated for the North Campus and other offsite areas beyond the boundaries of Parcel H-3.

FEASIBILITY OF REMEDIATION TO BACKGROUND LEVELS

Long VOC remediation time frames (i.e., extended decades) are expected to exist at the North Campus and Parcel H-3 because of back-diffusion of chemical mass adsorbed in the clay and silt layers in the saturated zone. In addition, the low hydraulic conductivity of the fine-grained zones limits the effectiveness of VOC recovery from these units and the distribution of remedial amendments injected in the subsurface.

The processes of forward- and back-diffusion have proven to sustain VOC concentrations in groundwater at levels well above cleanup criteria for long periods at sites where clay or silt is present (Chapman and Parker, 2005). North Campus and Parcel H-3 data collected from 2016 to 2019, as noted in the Conceptual Site Model Report, Parcel H-3 and Offsite Areas (AECOM, 2019b), indicate that TCE diffused into silts and clays, likely over decades, resulted in an accumulation of TCE mass in these fine-grained soils. Likewise, similar evaluations have also documented the occurrence of VOC mass storage in fine-grained units at the adjacent South Campus and the long

remedial time frames expected because of VOC back diffusion from these units (Haley and Aldrich, 2016).

Remediation Limitations Due to Fine-Grained Soil Adsorption at Similar California Sites
Similar limitations on attaining background based remedial cleanup levels have been observed at other sites in California where soil conditions have required Technical Impracticability (TI) waivers from the United States Environmental Protection Agency (EPA) to waive the need to achieve cleanup goals (National Resources Council, 2012; Environmental Security Technology Certification Program, 2011). Relevant case studies were summarized in the Groundwater Remedial Action Plan Addendum (Haley and Aldrich, 2016) and are repeated below:

- Del Norte Pesticide Storage National Priority List (NPL) Site, Del Norte County, California: "In 1987, the EPA removed nearly 300 cubic yards of contaminated soil that were considered to be the source of chemicals in groundwater. An air stripping unit operated from 1989 through 1996 and reached protective levels for site contaminants except for 1,2-dichloropropane. After several attempts to optimize the treatment system, it was shown that the concentration of the remaining chemicals would slowly decline whether or not the treatment system was operating. In addition, monitoring results indicated that groundwater chemicals were not migrating. EPA's 2000 Record of Decision (ROD) Amendment concluded it was technically impracticable to remediate 1,2-dichloropropane in groundwater to meet the MCL. In the ROD Amendment, EPA attributed asymptotic conditions in 1,2-dichloropropane concentrations to slow desorption from clays and silts (back-diffusion) to groundwater. The ROD halted the active pumping and treating of groundwater and granted the TI waiver; monitoring is ongoing (United States Army Corps of Engineer [USACE], 2015a)."

- Koppers Site, Oroville, California: "This site was placed on the National Priority List in 1984 primarily due to pentachlorophenol contamination (Rojas-Mickelson, 2013). After achieving containment of chemicals, a TI waiver and ROD amendment were granted in 1999 for the groundwater remedy because dense non-aqueous phase liquid (DNAPL) was likely present in a clay layer 30 to 300 feet bgs. One of the primary reasons for approval was that no technology exists to restore the aquifer to drinking water standards. Also included in the ROD amendment was the addition of enhanced in-situ bioremediation (EISB) to the groundwater remedy, monitored natural attenuation (MNA) as a contingency remedy, and a revised groundwater standard for pentachlorophenol."

- Westinghouse Electric, Sunnyvale, California: "In 1991, EPA signed the ROD selecting the remedy for the site. The selected remedy required extraction and treatment of groundwater, containment of groundwater in the polychlorinated biphenyl (PCB) source area, removal and offsite incineration of contaminated soil, institutional controls, and monitoring. The cleanup plan outlined in the ROD included leaving contamination above health-based levels in both soil and groundwater on the site, but required a cap and restrictions on excavation for those areas where soil PCB concentrations exceed 25 milligrams per kilogram (mg/kg). A TI waiver was invoked in the ROD for the groundwater that contained DNAPL and required that those areas be permanently contained and that land use restrictions prevent access to this contamination (USACE, 2011). The requirement to treat to the federal MCL for PCBs was waived. The TI waiver for groundwater at this site concluded it was technically impracticable to remediate DNAPL containing PCBs and VOCs due to "heterogeneous soil of low permeability" and the

high likelihood for PCBs to sorb to soil" (Environmental Security Technology Certification Program, 2011)."

- Milano Holdings, San Diego County, California: Under Investigative Order No. R9-2009-0015 issued by the San Diego RWQCB, an EISB and MNA groundwater remedy was allowed to proceed within different areas of concern using alternate cleanup goals. Since 1986, significant investigation and remediation was conducted at the Milano site including implementation of a multiphase extraction system for 3 years to remove VOCs, three targeted source removals, removal and disposal of contaminated soil, and addition of soil amendments to facilitate in-situ degradation. Despite these efforts, relatively high VOC concentrations, orders of magnitude above MCLs, still persisted in the subsurface. Groundwater in the area has been designated for beneficial use. The Milano corrective action plan (de maximis, inc., 2011) evaluated various remedial alternatives and recommended MNA and deed restrictions to address the remaining VOCs. The San Diego RWQCB accepted the MNA remedy and issued a no further action letter in 2014 after a few annual groundwater monitoring reports documented the occurrence of MNA and decreasing and/or stable VOC plumes."

Case Study Applicability to North Campus/Parcel H-3

The case studies summarized above demonstrate that there are no remedial technologies capable of achieving complete cleanup of TCE or similar organic compounds that have accumulated over many decades in layers of silt and clay similar to the situation present at the North Campus/Parcel H-3. Furthermore, concentration decline analyses for the North Campus/Parcel H-3 (see Attachment A), indicate that achieving background water quality conditions will require 100 years or more of natural attenuation than an alternative cleanup criterion such as MCLs, and these estimates do not account for the slow post-remedial back diffusion of VOC mass stored in fine grained layers, which will further extend remedial time frames and increase remedial costs significantly. Based on the case studies and site-specific trend analysis, remediating TCE and other VOCs to background conditions at the North Campus/Parcel H-3 is impracticable; therefore, alternative cleanup goals should be considered.

ALTERNATIVE CLEANUP GOALS

Alternative cleanup levels are proposed for Parcel H-3 that are protective of human health and the beneficial uses of groundwater. The beneficial uses of groundwater include municipal and domestic supply, as designated in the Water Quality Control Plan for the San Diego Basin. In addition, the existing site data suggest that VOCs plumes extend to the shoreline of San Diego Bay; consequently, there is the potential for discharge of VOCs to the bay and associated ecological/human heath exposures. Lastly, potential human health risk receptors to shallow (Zone A) groundwater at Parcel H-3 include future construction workers, hotel workers, landscapers, and hotel guests/recreational receptors. The applicable cleanup criteria consistent with these situations are:

- Drinking Water MCLs
- Applicable CTR criteria
- Risk-based goals for the above construction worker/commercial/recreational receptors

For shallow Zone A groundwater away from the shoreline of the Chula Vista Marina and San Diego Bay, the proposed cleanup goals are the more stringent of the MCLs and risk-based goals for the construction worker/commercial/recreational receptors. For deeper groundwater (Upper and Lower Zone B), the proposed goals are the MCLs. This approach is consistent with that used for the adjacent South Campus (Haley and Aldrich, 2016).

An MCL has not been established for 1,4-dioxane. The Division of Drinking Water (DDW), however, has established Notification Levels (NLs) and Response Levels (RLs) for 1,4-dioxane. NLs and RLs are advisory in nature and not enforceable standards. The DDW requires water purveyors to notify its customers and take other actions if NLs are exceeded in a drinking water source (a production well for example) and recommends removing a drinking source from service if the RL is exceeded. For 1,4-dioxane, the NL is 1 μg/L and corresponds to a 3x10-6 lifetime cancer risk for drinking water consumption; the RL is 35 μg/L and corresponds to a 10-4 lifetime cancer risk. For the North Campus/Parcel H-3, the proposed cleanup goal for 1,4-dioxane is the NL, even though Zone A and B groundwater cannot be used for a drinking water source without pretreatment because of elevated total dissolved solids.

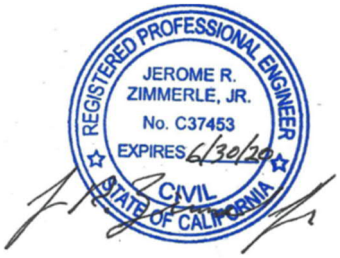
In addition, as summarized above, the VOC and 1,4 dioxane-plumes extend to the Chula Vista Marina and San Diego Bay. For monitoring wells) located near the shoreline (i.e., point of compliance wells), the appropriate alternative clean up criteria are the CTRs. This approach is consistent with that used for the South Campus.

SUMMARY

In summary, this Report addresses pending CAO requirements with respect to alternative cleanup levels for groundwater remediation by demonstrating that it is not feasible to remediate groundwater to background water quality concentrations at Parcel H-3. The proposed alternative cleanup goals are the more stringent of human health risk goals and MCLs for shallow (Zone A) groundwater, and MCLs for deeper (Zone B) groundwater. For 1,4-dioxane, the proposed cleanup goal is the DDW NL (1 μg/L). The Human Health Risk Assessment (HHRA) for Parcel H-3 incorporates risk-based goals for the construction worker/commercial/recreational receptors for the primary risk drivers. Similar health-risk goals will be developed for other exposure areas of the North Campus as part of a future HHRA. In addition, CTRs are the proposed alternative cleanup goals for point of compliance monitoring wells located near the shoreline of the Chula Vista Marina and San Diego Bay.

Please contact Mr. Rick Siordia at 619.691.4279 or the undersigned if you have any questions. If you have any questions.

Sincerely,



Jerome R. Zimmerle, Jr. PE
Principal Engineer

Richard Sturn, PG, CHG
Principal Hydrogeologist

Attachments:

Figure 1 – South Campus, North Campus, and Parcel H-3 Locations
Figure 2 – Site Plan with Groundwater Monitoring Well Locations
Attachment A – TCE Concentration Decline Half-Life in Groundwater

cc: B. Amig – UTC
R. Siordia – Collins
K. Carr – AECOM
R. Sillan – AECOM

References:

AECOM, 2019a. Background Soil and Groundwater Report for the North Campus, Rohr Inc., Former North Campus Facility, Chula Vista, California. August 12.

AECOM, 2019b. Conceptual Site Model (CSM) Report for the North Campus, Rohr Inc., Former North Campus Facility, Chula Vista, California. September 30.

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Chapman, S. W. & Parker, B. L., 2005. Plume persistence due to aquitard back diffusion following dense nonaqueous phase liquid source removal or isolation. Water Resources Research. Vol. 41, W12 411, p. 1-16.

de maximis, inc., 2011. Corrective Action Plan, Revision 2, Milano Holdings Inc. Site, San Marcos, CA. May 23.

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National Resources Council, 2012. Alternatives for Managing the Nation's Complex Contaminated Groundwater Sites. Prepublication copy, Committee on Future Options for Management in the Nation's Subsurface Remediation Effort, Water Science and Technology Board, Division on Earth and Life Studies.

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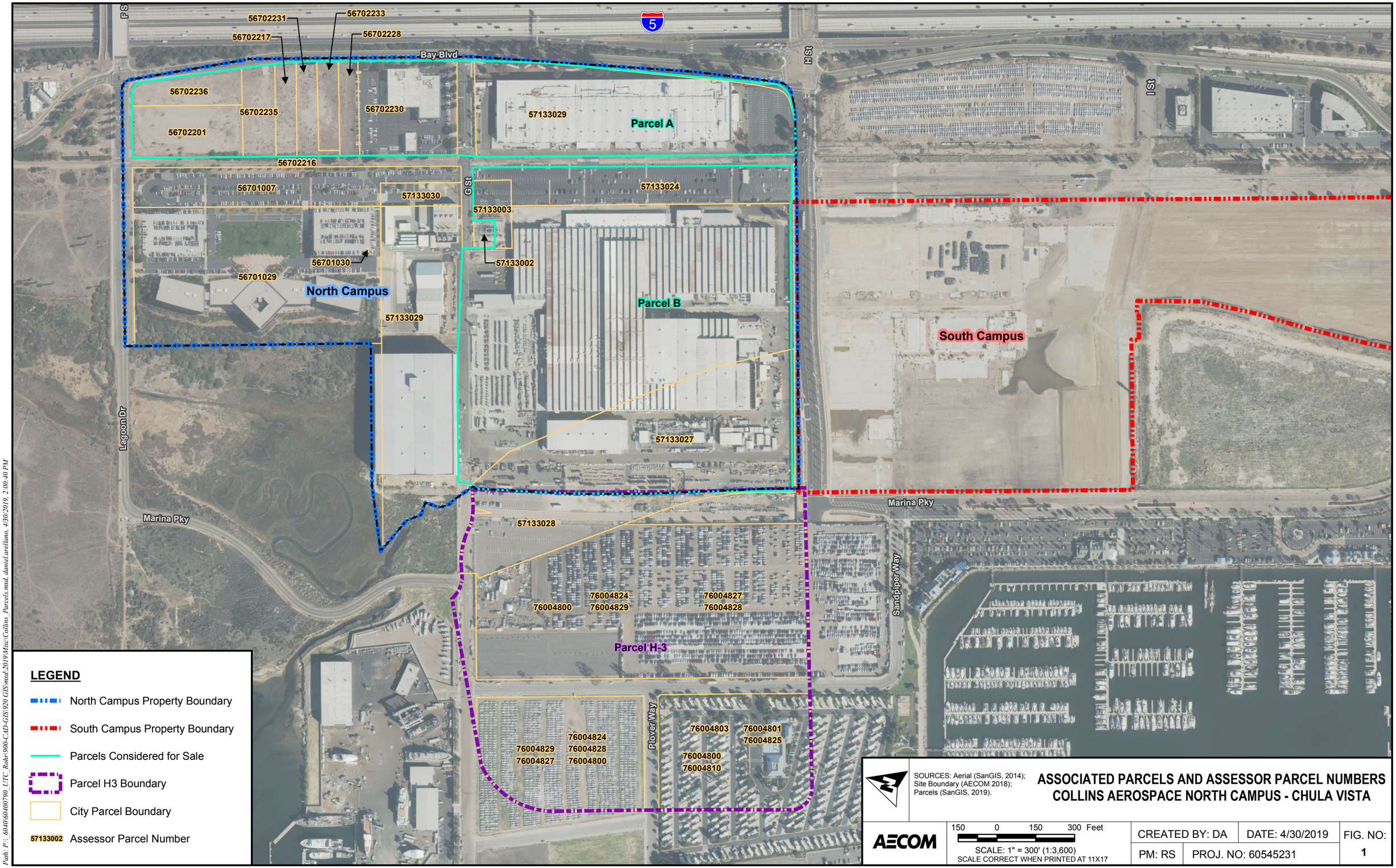
United States Army Corps of Engineers, Seattle District for the U.S. EPA, 2015a. Fourth Five-Year Review for Del Norte Pesticide Storage Area Superfund Site, Del Norte County, California. June 19.

United States Army Corps of Engineers, Seattle District for the U.S. EPA, 2011. Third Five-Year Review for the Westinghouse Electric Corp. Superfund Site, Sunnyvale, Santa Clara County, California. September 29.

FIGURES



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SOURCES: Aerial (SanGIS, 2014); Site Boundary (AECOM 2018); Parcels (SanGIS, 2019).

ASSOCIATED PARCELS AND ASSESSOR PARCEL NUMBERS COLLINS AEROSPACE NORTH CAMPUS - CHULA VISTA

AECOM

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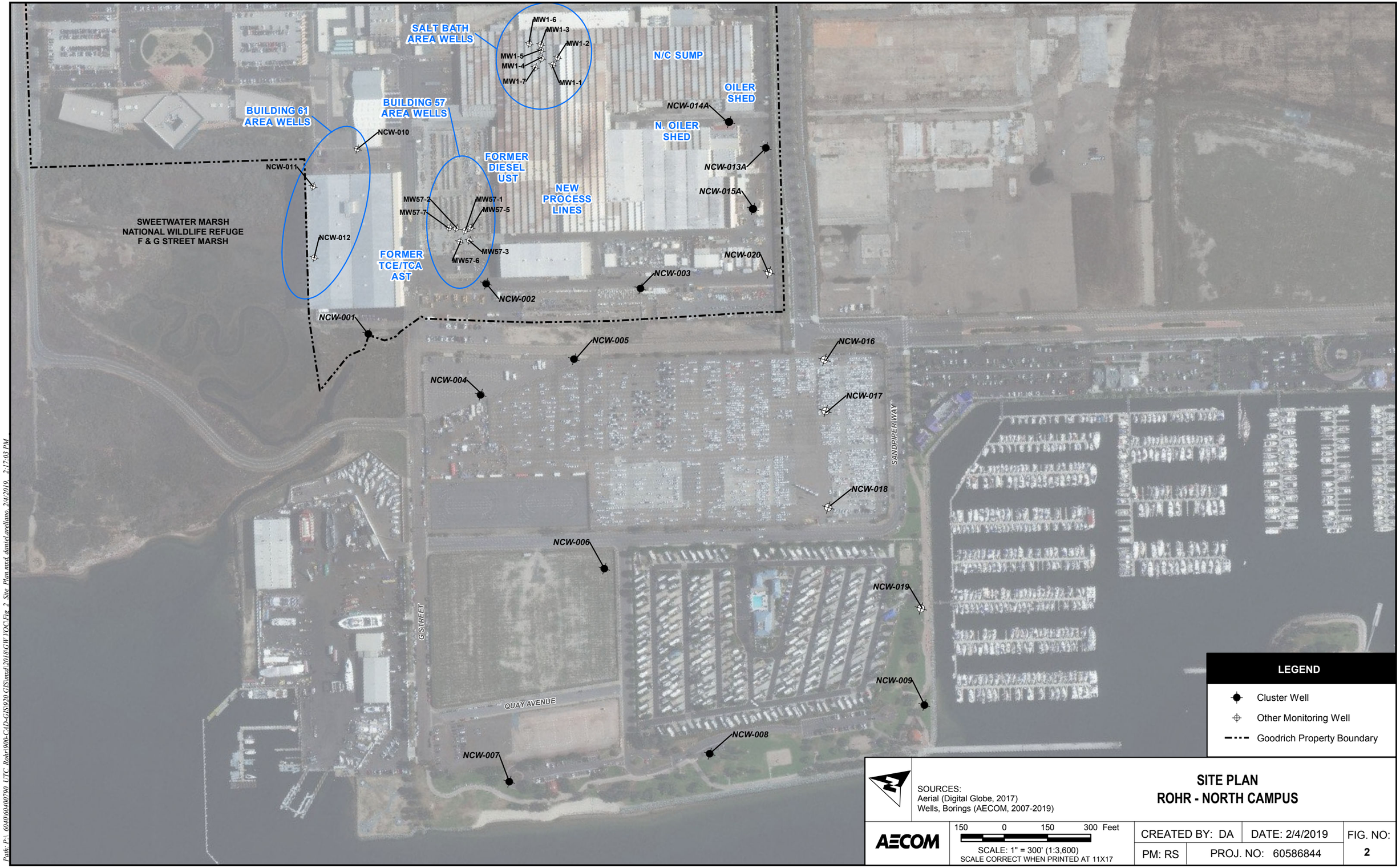

LEGEND

- Cluster Well
- Other Monitoring Well
- Goodrich Property Boundary

SOURCES:
Aerial (Digital Globe, 2017)
Wells, Borings (AECOM, 2007-2019)

SITE PLAN
ROHR - NORTH CAMPUS

AECOM

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ATTACHMENT A

TCE CONCENTRATION DECLINE HALF-LIVES IN GROUNDWATER

ATTACHMENT A

TCE CONCENTRATION DECLINE HALF-LIFE ANALYSIS FOR GROUNDWATER NORTH CAMPUS AND PARCEL H-3, CHULA VISTA, CALIFORNIA

1. INTRODUCTION

Thirty-nine (39) groundwater monitoring wells have been installed across the former North Campus facility and adjacent Parcel H-3 property in Chula Vista, California with groundwater monitoring events occurring as early as 2006 and as recently as 2018. Seventeen (17) of these wells have current concentrations that are at or below the maximum contaminant limit (MCL) of 5 micrograms per liter (µg/L) for the primary volatile organic compound present in groundwater, trichloroethene (TCE). The remaining 22 wells are evaluated in this analysis to assess the changes in TCE concentrations over time primarily with respect to concentration declines that have been observed. These declines are likely due to the naturally-occurring depletion of source material in the aquifer below the North Campus and Parcel H-3, especially from biologically driven reductive dehalogenation based on the detection of typical TCE biodegradation byproducts such as 1,2 cis-dichloroethene (cis-1,2-DCE) and vinyl chloride (**Tables A-1** and **A-2**). The purpose of this analysis is to quantify the rate and corresponding half-life for TCE concentration declines in groundwater beneath the North Campus and Parcel H-3.

2. METHODOLOGY

A summary table of TCE concentrations in groundwater versus time was prepared for the 39 permanent monitoring wells within the boundaries of the North Campus and Parcel H-3, based on the project database as of the Fourth Quarter 2018 groundwater monitoring event (**Table A-2**). Concentrations of typical biodegradation by-products such as cis-1,2-DCE and vinyl chloride in these wells are also provided in **Table A-2** to provide an indication of whether or not active biodegradation is occurring near the well.

Decline rates and half-lives were only calculated for monitoring wells in which the majority of TCE concentrations over time were greater than 10 µg/L and the majority of the samples had detected concentrations. Wells at which TCE concentrations have typically been below 10 µg/L or were largely non-detect are representative of the lateral and vertical fringe of the groundwater plume, and are not as relevant to remediation timeframe calculations as the wells with higher TCE concentrations. There were 17 out of 39 monitoring wells that were not included in this analysis because TCE concentrations were typically below 10 µg/L or were largely non-detect, including: NCW-001A, NCW-001B, NCW-002C, NCW-003C, NCW-004A, NCW-004C, NCW-005A, NCW-005C, NCW-007B, NCW-007C, NCW-008C, NCW-009B, NCW-009C, MW-57-2, MW-57-3, MW-57-5, and MW-57-7. Currently, TCE concentrations in 13 of 17 of these wells have no detectable TCE, 3 wells have detections that are below the TCE MCL of 5 µg/L, and the last well (MW-57-7) is just above the MCL at 5.8 µg/L (**Table A-2**). Therefore, these wells already represent reasonably acceptable groundwater conditions and excluding these wells from additional evaluation in this document is appropriate.

Concentration versus time charts were then prepared for the remaining 22 monitoring wells in which the majority of TCE concentrations were higher than 10 µg/L (see **Figures A-1** to **A-22**), including:

- 8 wells screened in hydrogeological Zone A (shallow zone - NCW-002A, NCW-003A, NCW-010, NCW-011, NCW-012, NCW-013A, MW-57-1, and MW-57-6);
- 11 wells screened in hydrogeological Zone UB (upper portion of Zone B - NCW-002B, NCW-003B, NCW-004B, NCW-005B, NCW-006A, NCW-006B, NCW-007A, NCW-008A, NCW-008B, NCW-009A, and NCW-013B); and
- 3 wells screened in hydrogeological Zone LB (lower portion of Zone B – NCW-001C, NCW-006C, and NCW-013C).

If TCE was not detected at a specific well during a monitoring event, then a distinct symbol (open circle) was plotted to indicate TCE was not detected. These non-detect symbols were plotted at concentrations corresponding to the reported detection limit.

Given that concentration declines at chlorinated solvent sites typically occur based on an exponential decline model, the exponential regression model in Microsoft Excel was used to estimate the rate of TCE concentration decline at each monitoring well. The predicted trend equations and associated correlation coefficients (R^2) for each well are provided on **Figures A-1** to **A-22**.

Five of the remaining 22 monitoring wells had either no clear trend or an apparent increasing concentration trend based on review of the trend graphs: NCW-001C (LB), NCW-004B (UB), NCW-005B (UB), NCW-006B (UB), and NCW-013B (UB). Charts for these five monitoring wells are shown on **Figures A-1, A-6, A-7, A-9**, and **A-16**, respectively. Groundwater conditions for these wells are discussed as follows:

- TCE concentrations in NCW-001C (LB) from 2006 to 2012 stayed relatively stable in a range below the TCE MCL of 5 µg/L from non-detect to 3.9 µg/L, and then increased over several events to 68 µg/L by June 2016, before declining again to 1.2 and 0.35 µg/L in the last two monitoring events in 2017 and 2018 (**Figure A-1**). Excluding the temporary increase which has returned to historical concentrations, well NCW-001C has shown generally stable to slightly declining concentrations below the TCE MCL;
- TCE in NCW-004B (UB) has had varying concentrations with an average of approximately 10,000 µg/L from 2006 to 2018 (**Figure A-6**). The well is showing a slight declining trend of 6E-06 per day with an average concentration of approximately 11,100 µg/L from 2006 to 2011, which declines to approximately 8,600 µg/L from 2012 to 2018;
- TCE in NCW-005B (UB) has had varying concentrations with an average of approximately 3,700 µg/L from 2006 to 2018 (**Figure A-7**). The well is showing an increasing trend with an average of approximately 3,000 µg/L from 2006 to 2011, which increased to 5,000 µg/L from 2012 to 2018;
- TCE in NCW-006B (UB) has had similar concentrations over time with an average of approximately 1,700 µg/L from 2012 to 2018 (**Figure A-9**). The well is showing an increasing trend with an average of approximately 1,600 µg/L from 2012 to 2015, which increased to 2,100 µg/L from 2016 to 2018; and
- TCE in NCW-013B (UB) has had similar concentrations over time with an average of approximately 23 µg/L from 2012 to 2018 (**Figure A-16**). The well is showing a slight increasing

trend with an average of approximately 20 µg/L from 2012 to 2015, which increased to 27 µg/L from 2016 to 2018.

These wells will be further evaluated in the subsequent Feasibility Study/Remedial Action Plan for the North Campus/Parcel H-3, which is under preparation.

The remaining 17 monitoring wells showed potentially declining concentration trends in the trend graphs and were further evaluated to assess the rate of concentration decline and the corresponding half-lives (see **Section 3.0** and **Table A-1**).

3. RESULTS

The TCE exponential regression models over time for the 17 monitoring wells with declining concentrations are shown on **Figures A-2 to A-5, A-8, A-10 to A-15**, and **A-17** through **A-22** as a dashed line. The corresponding model equations and correlation coefficients (R^2) are also shown on these figures. These equations were used to predict the decline rate in units of 1/day based on the slope of the regression trend line. As an example, in the equation below from well NCW-002B with y defined as the TCE concentration and x defined as time in days, the slope or decline rate is 1.0E-4 or 0.0001 per day (units of 1/day).

$$y = 5050.5e^{-1E-04x}$$

The half-life in years was then determined based on a first order equation:

$$\text{Half-life, t in years} = \frac{\ln(\text{final concentration/initial concentration or 0.5 for half-life})}{\text{decline rate, k (1/day)} \times 365 \text{ days/year}}$$

Calculated half-lives are shown in **Table A-1** and generally ranged from 1 to 21 years, although two wells (MW-57-6 and NCW-013C) exhibited half-lives which were longer than this range.

There were five monitoring wells for which there was a poor correlation (i.e. low R^2), likely due to a general lack of concentration changes over time or significant scatter in concentrations, including: NCW-003A, NCW-003B, NCW-013C, MW-57-1, and MW-57-6. Charts of TCE concentration versus time and the regression results for these five wells are shown on **Figures A-4, A-5, A-17, A-21**, and **A-22**, respectively. A description of conditions at these locations is presented below:

- TCE in wells NCW-013C (LB), MW-57-1 (A) and MW-57-6 (A) had correlation coefficients ranging from 0.01 to 0.002 with as much as or more than an order of magnitude change in temporal variability in concentrations from sample to sample (**Figures A-17, A-21**, and **A-22**). For example, the TCE concentration in well MW-57-6 from December 2009 to June 2010 to November 2010 changed from 9,500 µg/L to 30 µg/L to 2,100 µg/L leading to a lower correlation. In addition, overall trends show just slight declines to stable concentrations over time indicating source mass remains near/upgradient of these wells. These limited declines produced some of the longer half-lives in the North Campus/Parcel H-3 wells ranging from 16.5 to 31.5 years.
- TCE in well NCW-003A (A) showed two declining periods (2006 to 2012 and 2014 to 2018) with an increase in concentrations in 2013 (Figure A-4; R^2 of 0.041). The two declining periods have

the same half-lives of 1.6 and 1.5 years with improved correlation coefficients of 0.28 and 0.62, respectively – see **Table A-1** and **Figures A-4 Alt and A-4 Alt 2**. The TCE half-life without the impact of the 2013 change in TCE concentration is reduced from approximately 10 years to 1.5 years, indicating that well NCW-003A actually has an effective TCE degradation rate similar to the other wells showing more rapid degradation.

- TCE at NCW-003B (UB) has had consistent spikes ranging from 6,200 µg/L to 8,500 µg/L from 2006 to 2017 with an anomalous decline to 150 µg/L in 2013 and a similar decline to 300 µg/L in 2018 (**Figure A-5**; R^2 of 0.061). However, even though spikes in TCE concentrations have occurred, TCE concentrations show an overall declining trend.

As shown in **Table A-1**, the calculated half-lives are based on a long monitoring period of approximately 6 to 13 years. There was also a geometric mean decrease of a factor of 43 times between the maximum and minimum concentration observed at each of the monitoring wells shown in **Table A-1**, which is a good indication that these estimated concentration decline half-lives are generally statistically significant.

As a second check on the statistical significance of the concentration trends, p-values were calculated for the 17 wells. The p-value is used to assess whether the slope of the regression line is not significantly different from zero such that a p-value of less than 5% or 0.05 is a clear indication of a trend. The p-values were calculated for each regression by first calculating the natural logarithm transformation of concentrations (i.e. ln C), and then performing a linear regression in Microsoft Excel based on ln C versus time. Approximately half of the wells in **Table A-1** have a p-value less than the threshold of 0.05. The remaining nine wells - NCW-002A, NCW-003A, NCW-003B, NCW-006A, NCW-009A, NCW-013C, NCW-012, MW-57-1 and MW-57-6 - showed an exceedance of this threshold with p-values ranging from 0.13 to 0.858. The trend analysis in these wells is affected by several factors including varying combinations of multiple non-detect samples, variable concentrations from sample to sample, and several anomalous data points that are outside the trend lines. However, as noted in the discussion of specific wells in this document and the trend graphs, these wells show indications of either underlying declining trends (NCW-002A, NCW-003A, NCW-003B, and NCW-009A) or stable/slightly declining trends (NCW-006A, NCW-009A, NCW-013C, NCW-012, MW-57-1 and MW-57-6).

As a third check on statistical significance, EPA (2002) indicates that a one-tailed (lower) confidence interval for decline rates with a level of confidence of 90% is applicable to most sites. The lower confidence intervals for the 17 wells with potential declining rates were estimated based on the natural logarithm of concentrations. If the lower confidence interval is less than zero, then it may indicate that the slope of the regression line is not significantly different from zero (i.e., well trend is closer to being stable than declining). Results for this level of confidence and for the more stringent 95% confidence level are shown in **Table A-1**. Five wells of the 17 wells had 90% confidence intervals less than zero and p-values more than 0.05 – NCW-003A, NCW-006A, NCW-013C, MW-57-1 and MW-57-6. Four more wells had 95% confidence levels less than zero and p-values more than 0.05 - NCW-002A, NCW-003B, NCW-009A, and NCW-012. However, as noted above in the discussion on p-values, a number of these wells actually show declining trends (4 wells) or stable trends (5 wells).

The purpose for calculating point-decline half-lives was to qualitatively evaluate the degree of naturally-occurring source depletion and/or TCE biodegradation in groundwater beneath the North Campus and Parcel H-3 as a means of assessing the length of time necessary for groundwater to reach a cleanup goal, such as actually achievable post-remedial concentrations up to and including MCLs. The same first order equation used above to estimate the rate of TCE concentration decline can be used to assess this length of time. As an initial estimate, estimates for the time needed for individual wells to attain MCLs were calculated (**Table A-1**). Results indicate that:

- 11 of 17 wells with declining trends would attain MCLs in approximately 40 years or less including 4 wells that already meet the TCE MCL of 5 µg/L;
- 3 of the remaining wells could potentially require approximately 50 to 70 years to attain MCLs (NCW-003B, NCW-011, and NCW-012);
- The last 3 wells could potentially require 100 years or more to attain MCLs (MW-57-1, MW-57-6, and NCW-006A); and
- The estimated time necessary to achieve lower goals background conditions (i.e., detection limit of 0.1 µg/L) would be as much as 100 years longer than the time needed to achieve MCLs.

Note that there is some uncertainty in these half-life calculations, in part due to natural variability in groundwater flow directions and chemical concentrations in the North Campus/Parcel H-3 monitoring wells. However, these calculations do indicate that:

- Source depletion is naturally-occurring upgradient of many of the North Campus/Parcel H-3 monitoring wells;
- Typical TCE biodegradation by-products have been detected in nearly all the wells indicating active biodegradation is occurring in the aquifer; and
- The rate of source depletion is variable in different parts of the North Campus and Parcel H-3.

The data from this analysis will be used to support selection of alternative cleanup levels such as MCLs as part of the preparation of the subsequent Feasibility Study/Remedial Action Plan for the North Campus and adjacent Parcel H-3.

Reference

EPA, 2002. Calculation and Use of First-Order Rate Constants for Monitored Natural Attenuation Studies. Groundwater Issue. EPA/540/S-02/500. November.

TABLES

TABLE A-1
CONCENTRATION DECLINE HALF-LIFE CALCULATIONS
FORMER NORTH CAMPUS/PARCEL H-3
CHULA VISTA, CALIFORNIA

Location	Unit	Decline Rate (1 per day)	Decline Half-Life (years)	R^2	p-Value	Decline Rate Confidence		Maximum Concentration (ug/L)	Minimum Concentration (ug/L)	Most Recent Concentration (ug/L)	Bio-degradation Byproducts Present?	Duration of Trend Period (Years)	Time to Reach MCL of 5 ug/L (Years)
						90% Confidence (one-tailed)	95% Confidence (one-tailed)						
NCW-002A	A	1.90E-03	-1.0	0.567	<.0001	1.51E-03	1.40E-03	2,800	1.0	ND < 5	Yes	13	Meets Now
NCW-002B	UB	1.02E-04	-18.7	0.070	0.130	1.61E-05	-9.02E-06	210	22	22	Yes	13	40
NCW-003A	A	1.98E-04	-9.6	0.041	0.248	-2.24E-05	-8.73E-05	4,000	51	51	Yes	13	32
NCW-003B	UB	1.64E-04	-11.6	0.061	0.160	1.49E-05	-2.89E-05	8,500	150	300	Yes	13	68
NCW-006A	UB	1.29E-04	-14.7	0.107	0.200	-7.44E-08	-3.97E-05	12,000	4,500	4,500	Yes	6	145
NCW-006C	LB	1.47E-03	-1.3	0.522	0.001	1.00E-03	8.58E-04	29	0.64	0.64	No	6	Meets Now
NCW-007A	UB	7.17E-04	-2.6	0.308	0.011	3.80E-04	2.78E-04	60	2.0	2.0	Yes	6	Meets Now
NCW-008A	UB	8.36E-04	-2.3	0.204	0.045	3.19E-04	1.62E-04	770	15	23	Yes	6	5
NCW-008B	UB	1.56E-03	-1.2	0.424	0.002	9.89E-04	8.16E-04	68	1.1	ND < 2	Yes	6	Meets Now
NCW-009A	UB	6.78E-04	-2.8	0.130	0.118	1.28E-04	-3.91E-05	840	4.9	28	Yes	6	7
NCW-013A	A	1.83E-03	-1.0	0.761	<.0001	1.51E-03	1.41E-03	1,300	19	39	Yes	6	3
NCW-013C	LB	6.02E-05	-31.5	0.002	0.858	-3.81E-04	-5.14E-04	54	3.5	8.4	Yes	6	24
NCW-010	A	1.59E-03	-1.2	0.409	0.004	9.52E-04	7.56E-04	55	1	16	Yes	5	2
NCW-011	A	3.28E-04	-5.8	0.270	0.019	1.59E-04	1.08E-04	2,600	480	1,600	Yes	6	48
NCW-012	A	8.82E-05	-21.5	0.127	0.134	1.36E-05	-9.17E-06	88	53	53	Yes	6	73
MW-57-1	A	1.15E-04	-16.5	0.011	0.646	-2.13E-04	-3.11E-04	540	8.2	340	Yes	10	100
MW-57-6	A	6.76E-05	-28.1	0.002	0.829	-3.40E-04	-4.62E-04	20,000	30	9,200	Yes	13	305

Appendix A Table A-2
Historical Groundwater Sample Analytical Results - TCE and Other Selected VOCs
Rohr - North Campus
(concentrations reported in µg/l)

Well/Boring No.	Lab ID	Sample ID	Date	TCE	cis-1,2-DCE	VC
Well Clusters:						
NCW-001A	06-06-0318-8	GWS00204	06/06/06	1.9	< 1.0	< 0.50
	06-12-0272-1	GWS00231	12/05/06	< 1.0	< 1.0	< 0.50
	07-03-1813-2	GWS00263	03/27/07	< 1.0	< 1.0	< 0.50
	07-06-1565-1	GWS00279	06/19/07	< 1.0	< 1.0	< 0.50
	07-10-0152-1	GWS00316	10/01/07	< 1.0	< 1.0	< 0.50
	07-12-1572-8	GWS00343	12/18/07	< 1.0	< 1.0	< 0.50
	06-03-2519-1	GWS00367	03/26/08	< 1.0	< 1.0	< 0.50
	08-03-2519-2	GWS00368*	03/26/08	< 1.0	< 1.0	< 0.50
	08-06-2026-1	GWS00383	06/17/08	< 1.0	< 1.0	< 0.50
	08-09-1872-1	GWS00412	09/15/08	< 1.0	< 1.0	< 0.50
	08-09-1872-2*	GWS00413	09/15/08	**2.2**	< 1.0	< 0.50
	08-12-1241-1	GWS00428	12/08/08	**1.1**	< 1.0	< 0.50
	09-03-2253-0	GWS00457	03/23/09	< 1.0	< 1.0	< 0.49
	09-06-2028-5	GWS00474	06/23/09	< 1.0	< 1.0	< 0.50
	09-08-1796-1	GWS00496	08/18/09	< 1.0	< 1.0	< 0.50
	09-12-1019-3	GWS00512	12/09/09	**20**	< 1.0	< 0.50
	10-03-1952-1	GWS00540	03/23/10	< 1.0	< 1.0	< 0.50
	10-06-1111-1	GWS00556	06/10/10	< 1.0	< 1.0	< 0.50
	10-09-0209-1	GWS00585	09/01/10	< 1.0	< 1.0	< 0.50
	10-11-1692-2	GWS00601	11/18/10	< 1.0	< 1.0	< 0.50
	11-02-0739-1	GWS00630	02/09/11	< 1.0	< 1.0	< 0.50
	11-05-1539-2	GWS00647	05/24/11	< 1.0	< 1.0	< 0.50
	11-09-1862-3	GWS00676	09/27/11	< 1.0	< 1.0	< 0.50
	11-12-1757-1	GWS00692	12/21/11	**1.4**	< 1.0	< 0.50
	12-06-0588-2	GWS00721	06/07/12	< 1.0	< 1.0	< 0.50
	12-11-0854-2	GWS00764	11/12/12	< 1.0	< 1.0	< 0.50
	13-06-1021-6	GWS00880	06/14/13	< 1.0	< 1.0	< 0.50
	13-11-0949-3	GWS00949	11/12/13	< 1.0	< 0.50	< 0.50
	14-06-0773-4	GWS01020	06/10/14	< 1.0	< 1.0	< 0.50
	14-12-1017-3	GWS01089	12/10/14	< 1.0	< 1.0	< 1.0
	15-06-0768-3	GWS01156	06/09/15	< 1.0	< 1.0	< 0.50
	15-11-0949-1	GWS01260	11/12/15	< 2.0	< 2.0	< 1.0
	16-06-2038-19	GWS01328	06/28/16	< 2.0	< 2.0	< 1.0
	16-11-2392-2	GWS01400	11/28/16	< 2.0	< 2.0	< 1.0
	17-07-1991-2	GWS01470	07/31/17	< 2.0	< 2.0	< 1.0
	18-12-0905-3	GWS01597	12/10/18	< 10	< 10	< 5.0
Well/Boring No.	**Lab ID**	**Sample ID**	**Date**	**TCE**	**cis-1,2-DCE**	**VC**
NCW-001B	06-06-0451-1	GWS00205	06/06/06	**1.4**	< 1.0	< 0.50
	06-12-0272-3	GWS00232	12/05/06	**5.6**	< 1.0	< 0.50
	07-03-1813-3	GWS00264	03/27/07	**1.6**	< 1.0	< 0.50
	07-06-1565-2	GWS00280	06/19/07	**4.7**	< 1.0	< 0.50
	07-09-1986-1	GWS00310	09/26/07	**6.0**	< 1.0	< 0.50
	07-12-1572-9	GWS00344	12/18/07	1.0	< 1.0	< 0.50
	06-03-2519-3	GWS 00369	03/26/08	**1.9**	< 1.0	< 0.50
	08-06-2026-2	GWS00384	06/17/08	**2**	< 1.0	< 0.50
	08-09-1872-4	GWS00415	09/16/08	**3.3**	< 1.0	< 0.50
	08-12-1241-2	GWS00429	12/08/08	**2.8**	< 1.0	< 0.50
	09-03-2253-2	GWS00459	03/24/09	**6.2**	< 1.0	< 0.50
	09-06-2028-2	GWS00475	06/22/09	**5.4**	< 1.0	< 0.50
	09-08-1796-2	GWS00497	08/18/09	**3.2**	< 1.0	< 0.50
	09-12-1262-1	GWS00515	12/09/09	1.0	< 1.0	< 0.50
	10-03-1952-3	GWS00541	03/23/10	1.0	< 1.0	< 0.50
	10-06-1111-2	GWS00557	06/10/10	**3.3**	< 1.0	< 0.50
	10-09-0209-2	GWS00586	09/01/10	**2.9**	< 1.0	< 0.50
	10-11-1692-3	GWS00602	11/18/10	**6.2**	< 1.0	< 0.50
	11-02-0739-2	GWS00631	02/09/11	**4.9**	< 1.0	< 0.50
	11-05-1599-1	GWS00648	05/24/11	**4.6**	< 1.0	< 0.50
	11-09-1862-1	GWS00677	09/27/11	**1.9**	< 1.0	< 0.50
	11-12-1757-3	GWS00693	12/21/11	**5.8**	< 1.0	< 0.50

Appendix A Table A-2
Historical Groundwater Sample Analytical Results - TCE and Other Selected VOCs
Rohr - North Campus
(concentrations reported in µg/l)

Well/Boring No.	Lab ID	Sample ID	Date	TCE	cis-1,2-DCE	VC
	12-06-0588-4	GWS00722	06/07/12	1.0	< 1.0	< 0.50
	12-11-0854-1	GWS00765	11/12/12	**2.7**	< 1.0	< 0.50
	13-06-1021-5	GWS00881	06/14/13	**3.8**	< 1.0	< 0.50
	13-11-0949-2	GWS00950	11/12/13	**4.4**	< 0.50	< 0.50
	14-06-0773-3	GWS01021	06/10/14	**4.6**	< 1.0	< 0.50
	14-12-1017-2	GWS01090	12/10/14	**4.6**	< 1.0	< 0.50
	15-06-0768-2	GWS01157	06/09/15	**5.4**	< 1.0	< 0.50
	15-11-1086-3	GWS01261	11/13/15	**3.5**	< 1.0	< 0.50
	16-06-2038-21	GWS01329	06/28/16	**5.7**	< 0.50	< 0.50
	16-11-2514-8	GWS01415	11/29/16	**3.1**	< 0.50	< 0.50
	17-07-1991-3	GWS01474	07/31/17	**3.6**	< 1.0	< 0.50
	18-12-0906-6	GWS01598	12/10/18	**2.9**	< 1.0	< 0.50
Well/Boring No.	**Lab ID**	**Sample ID**	**Date**	**TCE**	**cis-1,2-DCE**	**VC**
NCW-001C	06-06-0451-2	GWS00206	06/06/06	**3.9**	< 1.0	< 0.50
	06-12-0272-4	GWS00233	12/05/06	**1.3**	< 1.0	< 0.50
	07-03-1813-4	GWS00265	03/27/07	1.0	< 1.0	< 0.50
	07-06-1565-3	GWS00281	06/19/07	**2.4**	< 1.0	< 0.50
	07-06-1565-4*	GWS00282	06/19/07	**2.5**	< 1.0	< 0.50
	07-09-1986-2	GWS00311	09/26/07	**2.9**	< 1.0	< 0.50
	07-12-1572-10	GWS00345	12/18/07	**1.7**	< 1.0	< 0.50
	06-03-2519-4	GWS00370	03/26/08	**1.2**	< 1.0	< 0.50
	08-06-2026-3	GWS00385	06/17/08	1.0	< 1.0	< 0.50
	08-09-1872-3	GWS00414	09/16/08	**2**	< 1.0	< 0.50
	08-12-1241-3	GWS00430	12/08/08	1.0	< 1.0	< 0.50
	09-03-2253-3	GWS00460	03/24/09	**2.7**	< 1.0	< 0.50
	09-06-2028-3	GWS00476	06/22/09	1.0	< 1.0	< 0.50
	09-08-1796-3	GWS00498	08/18/09	**1.5**	< 1.0	< 0.50
	09-12-1019-1	GWS00514	12/09/09	1.0	< 1.0	< 0.50
	10-03-1952-4	GWS00542	03/23/10	1.0	< 1.0	< 0.50
	10-06-1111-3	GWS00558	06/10/10	1.0	< 1.0	< 0.50
	10-09-0209-3	GWS00587	09/01/10	1.0	< 1.0	< 0.50
	10-11-1692-1	GWS00603	11/18/10	1.0	< 1.0	< 0.50
	11-02-0739-3	GWS00632	02/09/11	**2.3**	< 1.0	< 0.50
	11-05-1599-2	GWS00649	05/24/11	**2.9**	< 1.0	< 0.50
	11-09-1862-2	GWS00678	09/28/11	1.0	< 1.0	< 0.50
	11-12-1757-4	GWS00694	12/21/11	**2.4**	< 1.0	< 0.50
	12-06-0588-1	GWS00723	06/07/12	**2.8**	< 1.0	< 0.50
	12-11-0771-4	GWS00766	11/09/12	**1.3**	< 1.0	< 0.50
	13-06-1021-4	GWS00882	06/14/13	**3.5**	< 1.0	< 0.50
	13-11-0949-1	GWS00951	11/12/13	**15**	< 0.50	< 0.50
	14-06-0773-2	GWS01022	06/10/14	**21**	< 1.0	< 0.50
	14-12-1017-1	GWS01091	12/10/14	**30**	< 1.0	< 0.50
	15-06-0768-1	GWS01158	06/09/15	**41**	< 1.0	< 0.50
	15-11-1086-5	GWS01262	11/13/15	**36**	< 1.0	< 0.50
	16-06-2038-24	GWS01330	06/28/16	**68**	**1.2**	< 0.50
	16-11-2660-4	GWS01420	11/30/16	**45**	< 1.0	< 0.50
	17-07-1991-4	GWS01478	07/31/17	**1.2**	< 1.0	< 0.50
	18-12-0906-7	GWS01599	12/10/18	**0.35**	**0.44**	< 0.50
Well/Boring No.	**Lab ID**	**Sample ID**	**Date**	**TCE**	**cis-1,2-DCE**	**VC**
NCW-002A	06-06-0451-8	GWS00210	06/07/06	**2800**	**140**	< 0.50
	06-12-0385-5	GWS00238	12/06/06	**2400**	**150**	**14**
	07-03-1813-5	GWS00266	03/27/07	**1000**	**94**	**47**
	07-06-1565-5	GWS00283	06/19/07	**1800**	**110**	**15**
	07-09-2100-1	GWS00314	09/27/07	**1700**	**110**	**11**
	07-12-1572-4	GWS00339	12/18/07	**1600**	**110**	**8.9**
	06-03-2519-11	GWS00377	03/28/08	**860**	**53**	**14**
	08-06-2026-10	GWS00392	06/19/08	**730**	**68**	**24**
	08-09-1872-10	GWS00421	09/17/08	**1400**	**120**	**16**
	08-12-1095-4	GWS00431	12/10/08	**1600**	**94**	**9.7**

Appendix A Table A-2
Historical Groundwater Sample Analytical Results - TCE and Other Selected VOCs
Rohr - North Campus
(concentrations reported in µg/l)

Well/Boring No.	Lab ID	Sample ID	Date	TCE	cis-1,2-DCE	VC
	09-03-2499-4	GWS00461	03/25/09	**97**	**8.4**	**6.6**
	09-06-2107-5	GWS00477	06/24/09	**23**	**8.7**	**23**
	09-08-1897-2	GWS00499	08/20/09	**22**	**5.5**	**44**
	09-12-1262-1	GWS00515	12/14/09	**3.6**	**8.5**	**55**
	10-03-2055-3	GWS00543	03/24/10	**2.2**	< 1.0	**3.5**
	10-06-1365-4	GWS00559	06/16/10	**2.4**	< 1.0	**0.55**
	10-09-0315-3	GWS00588	09/03/10	**3.4**	**2.4**	**1.7**
	10-11-1905-1	GWS00604	11/23/10	1.0	< 1.0	< 0.50
	11-02-0848-2	GWS00633	02/10/11	**1**	< 1.0	< 0.50
	11-05-1707-5	GWS00650	05/24/11	1.0	< 1.0	**0.86**
	11-09-2055-3	GWS00676	09/28/11	**1.2**	< 1.0	< 0.50
	11-12-1904-6	GWS00695	12/22/11	**63**	< 1.0	**0.75**
	12-06-0796-2	GWS00724	06/12/12	**27**	< 1.0	< 0.50
	12-11-0508-3	GWS00767	11/07/12	**1.1**	< 1.0	**1.2**
	13-06-0831-2	GWS00883	06/12/13	1.0	< 1.0	**0.55**
	13-11-1203-5	GWS00952	11/14/13	**1.8**	**1.3**	**1.9**
	14-05-2159-1	GWS01023	05/29/14	1.0	< 1.0	< 0.50
	14-12-0903-3	GWS01092	12/09/14	**1.6**	< 1.0	**2.1**
	15-06-0557-2	GWS01159	06/05/15	1.0	< 1.0	< 0.50
	15-11-0949-3	GWS01263	11/12/15	1.0	< 1.0	< 0.50
	16-06-2038-11	GWS01331	06/28/16	1.0	< 1.0	**1.4**
	16-11-2392-1	GWS01401	11/28/16	2.0	< 2.0	**3.1**
	17-07-1991-1	GWS01469	07/31/17	**2.7**	< 2.0	**2.3**
	18-12-0905-6	GWS01600	12/10/18	5.0	< 5.0	< 2.5
Well/Boring No.	**Lab ID**	**Sample ID**	**Date**	**TCE**	**cis-1,2-DCE**	**VC**
NCW-002B	06-06-0451-9	GWS00211	06/07/06	**150**	**2.8**	< 0.50
	06-06-0451-10*	GWS00212	06/07/06	**130**	**1.6**	< 0.50
	07-03-1813-6	GWS00267	03/27/07	**86**	**2.1**	< 0.50
	07-03-1813-7*	GWS00268	03/27/07	**87**	**2.1**	< 0.50
	06-12-0385-7	GWS00239	12/06/06	**200**	**4.1**	< 0.50
	06-12-0385-8*	GWS00240	12/06/06	**210**	**3.9**	< 0.50
	07-06-1565-6	GWS00284	06/19/07	**110**	**2.5**	< 0.50
	07-10-0152-3	GWS00318	10/01/07	**110**	**2.2**	< 0.50
	07-12-1572-3	GWS00338	12/18/07	**58**	**1.6**	< 0.50
	06-03-2519-12	GWS00378	03/28/08	**70**	**1.3**	< 0.50
	08-06-2026-11	GWS00393	06/19/08	**110**	**3.6**	< 0.50
	08-09-1872-8	GWS00419	09/16/08	**80**	**2**	< 0.50
	08-12-0962-6	GWS00432	12/09/08	**98**	**2.5**	< 0.50
	09-03-2253-7	GWS00463	03/25/09	**99**	**1.7**	< 0.50
	09-06-2028-7	GWS00478	06/23/09	**62**	< 1.0	< 0.50
	09-08-1796-7	GWS00500	08/20/09	**39**	**1.4**	< 0.50
	09-12-1019-7	GWS00516	12/10/09	**31**	**1.6**	< 0.50
	10-03-1952-8	GWS00544	03/24/10	**140**	**3.3**	< 0.50
	10-06-1111-8	GWS00560	06/11/10	**99**	**2.0**	< 0.50
	10-09-0209-8	GWS00589	09/02/10	**100**	**2.8**	< 0.50
	10-11-1692-8	GWS00605	11/19/10	**31**	**1.1**	< 0.50
	11-02-0848-1	GWS00634	02/10/11	**120**	**2.7**	< 0.50
	11-05-1599-4	GWS00651	05/24/11	**44**	**1.5**	< 0.50
	11-09-1862-8	GWS00680	09/27/11	**92**	**2.3**	< 0.50
	11-12-1757-7	GWS00696	12/22/11	**81**	**2.1**	< 0.50
	12-06-0588-6	GWS00725	06/11/12	**110**	**2.1**	< 0.50
	12-11-0508-2	GWS00770	11/07/12	**91**	**3.0**	< 0.50
	13-06-0831-1	GWS00884	06/12/13	**86**	**1.9**	< 0.50
	13-11-1203-4	GWS00953	11/14/13	**66**	**2.3**	< 0.50
	14-05-2159-2	GWS01024	05/29/14	**96**	**3.1**	< 0.50
	14-12-0903-2	GWS01093	12/09/14	**64**	**2.1**	< 0.50
	15-06-0557-3	GWS01160	06/05/15	**100**	**4.0**	< 0.50
	15-11-1381-3	GWS01264	11/18/15	**110**	**4.2**	< 0.50
	16-06-2272-7	GWS01332	06/29/16	**100**	**3.0**	< 0.50
	16-11-2660-8	GWS01423	11/30/16	**110**	**3.0**	< 0.50

Appendix A Table A-2
Historical Groundwater Sample Analytical Results - TCE and Other Selected VOCs
Rohr - North Campus
(concentrations reported in µg/l)

Well/Boring No.	Lab ID	Sample ID	Date	TCE	cis-1,2-DCE	VC
	17-08-0103-1	GWS01482	08/01/17	**60**	**1.7**	< 0.50
	18-12-1047-9	GWS01601	12/11/18	**22**	**0.52**	< 0.50
Well/Boring No.	**Lab ID**	**Sample ID**	**Date**	**TCE**	**cis-1,2-DCE**	**VC**
NCW-002C	06-07-1409-1	GWS00230	07/27/06	**1.3**	< 1.0	< 0.50
	06-12-0385-9	GWS00241	12/06/06	**1.4**	< 1.0	< 0.50
	07-03-1813-8	GWS00269	03/27/07	**5.7**	< 1.0	< 0.50
	07-06-1565-7	GWS00285	06/19/07	**1.3**	< 1.0	< 0.50
	07-10-0152-4	GWS00319	10/01/07	**1.3**	< 1.0	< 0.50
	07-12-1572-2	GWS00337	12/18/07	< 1.0	< 1.0	< 0.50
	06-03-2519-13	GWS00379	03/28/08	**3.5**	< 1.0	< 0.50
	08-06-2026-12	GWS00394	06/19/08	**11**	< 1.0	< 0.50
	08-091872-6	GWS00417	09/16/08	< 1.0	< 1.0	< 0.50
	08-12-0962-4	GWS00433	12/09/08	< 1.0	< 1.0	< 0.50
	09-03-2253-5	GWS00464	03/24/09	< 1.0	< 1.0	< 0.50
	09-06-2028-5	GWS00479	06/23/09	< 1.0	< 1.0	< 0.50
	09-08-1796-5	GWS00501	08/18/09	< 1.0	< 1.0	< 0.50
	09-12-1019-5	GWS00517	12/10/09	< 1.0	< 1.0	< 0.50
	10-03-1952-6	GWS00545	03/24/10	**1.3**	< 1.0	< 0.50
	10-06-1111-6	GWS00561	06/11/10	**1.2**	< 1.0	< 0.50
	10-09-0209-6	GWS00590	09/02/10	< 1.0	< 1.0	< 0.50
	10-11-1692-6	GWS00606	11/19/10	< 1.0	< 1.0	< 0.50
	11-02-0739-6	GWS00635	02/09/11	**1.7**	< 1.0	< 0.50
	11-05-1599-3	GWS00652	05/24/11	**1.3**	< 1.0	< 0.50
	11-09-1862-6	GWS00681	09/27/11	**1.7**	< 1.0	< 0.50
	11-12-1757-5	GWS00697	12/22/11	**1.6**	< 1.0	< 0.50
	12-06-0588-5	GWS00726	06/08/12	**1.4**	< 1.0	< 0.50
	12-11-0508-1	GWS00769	11/07/12	**1.1**	< 1.0	< 0.50
	13-06-0706-3	GWS00885	06/11/13	**1.8**	< 1.0	< 0.50
	13-11-1203-3	GWS00954	11/14/13	< 1.0	< 1.0	< 0.50
	14-05-2159-3	GWS01025	05/29/14	**2.1**	< 1.0	< 0.50
	14-12-0903-1	GWS01094	12/09/14	**1.9**	< 1.0	< 0.50
	15-06-0557-1	GWS01161	06/05/15	< 1.0	< 1.0	< 0.50
	15-11-0949-2	GWS01265	11/12/15	2.7	< 1.0	< 0.50
	16-06-2272-2	GWS01333	06/29/16	**3.6**	< 1.0	< 0.50
	16-11-2514-6	GWS01413	11/29/16	**3.6**	< 1.0	< 0.50
Well/Boring No.	**Lab ID**	**Sample ID**	**Date**	**TCE**	**cis-1,2-DCE**	**VC**
NCW-003A	06-06-0451-3	GWS00207	06/06/06	**3100**	**180**	**8.8**
	06-12-0385-10	GWS00242	12/06/06	**4000**	**300**	**9.1**
	07-03-1813-9	GWS00270	03/27/07	**690**	**97**	**3.0**
	07-06-1565-8	GWS00286	06/20/07	**2600**	**200**	**6.5**
	07-09-2100-2	GWS00315	09/27/07	**2500**	**180**	**6.5**
	07-12-1572-5	GWS00340	12/18/07	**540**	**72**	**2.8**
	06-03-2519-14	GWS00380	03/28/08	**2300**	**150**	**7.6**
	08-06-2131-1	GWS00396	06/21/08	**490**	**55**	< 5.0
	08-091872-9	GWS00420	09/16/08	**340**	**56**	**2.8**
	08-12-1095-2	GWS00434	12/10/08	**2500**	**180**	**8.1**
	09-03-2499-2	GWS00465	03/25/09	**360**	**43**	< 0.50
	09-06-2107-3	GWS00480	06/24/09	**420**	**48**	**4.8**
	09-08-1796-9	GWS00502	08/20/09	**1100**	**100**	**5.8**
	09-12-1128-2	GWS00518	12/11/09	**250**	**39**	**2.8**
	10-03-2055-1	GWS00546	03/24/10	**580**	**53**	**3.8**
	10-06-1385-2	GWS00562	06/16/10	**230**	**30**	**3.7**
	10-09-0315-1	GWS00591	09/02/10	**160**	**20**	**3.0**
	10-11-1801-3	GWS00607	11/22/10	**150**	**19**	**1.4**
	11-02-0739-8	GWS00636	02/10/11	**340**	**32**	**4.5**
	11-05-1599-6	GWS00653	05/24/11	**140**	**15**	**4.1**
	11-09-2055-1	GWS00682	09/28/11	**520**	**55**	**4.0**
	11-12-1757-9	GWS00698	12/22/11	**95**	**12**	**1.2**
	12-06-0588-9	GWS00727	06/08/12	**160**	**17**	**2.7**

Appendix A Table A-2
Historical Groundwater Sample Analytical Results - TCE and Other Selected VOCs
Rohr - North Campus
(concentrations reported in µg/l)

Well/Boring No.	Lab ID	Sample ID	Date	TCE	cis-1,2-DCE	VC
	12-11-0625-3	GWS00771	11/08/12	**90**	**11**	**1.0**
	13-06-0916-2	GWS00886	06/13/13	**320**	**42**	**3.4**
	13-11-1306-1	GWS00955	11/15/13	**3800**	**130**	< 0.50
	14-05-2279-1	GWS01026	05/30/14	**1300**	**170**	**6.4**
	14-12-0903-5	GWS01095	12/09/14	**500**	**86**	**4.1**
	15-06-0557-5	GWS01162	06/05/15	**1000**	**130**	**8**
	15-11-1487-4	GWS01266	11/19/15	**380**	**57**	**3.3**
	16-06-2272-8	GWS01334	06/29/16	**1600**	**140**	**14**
	16-11-2659-3	GWS01426	11/30/16	**1900**	**190**	**15**
	17-08-0104-3	GWS01485	08/01/17	**2600**	**260**	**19**
	18-12-1047-6	GWS01602	12/11/18	**51**	**15**	**1.1**
Well/Boring No.	**Lab ID**	**Sample ID**	**Date**	**TCE**	**cis-1,2-DCE**	**VC**
NCW-003B	06-06-0451-6	GWS00208	06/07/06	**8500**	**120**	**8.7**
	06-12-0385-12	GWS00243	12/06/06	**4400**	**140**	**11**
	07-03-1813-10	GWS00271	03/27/07	**4500**	**140**	**8.4**
	07-06-1566-7	GWS00287	06/20/07	**6500**	**93**	**7.5**
	07-10-0152-6	GWS00321	10/01/07	**6500**	**78**	**7.7**
	07-12-1572-6	GWS00341	12/18/07	**2100**	**71**	**3.2**
	06-03-2519-15	GWS00381	03/28/08	**3500**	**100**	**5.5**
	08-06-2131-2	GWS00397	06/21/08	**3700**	**130**	**9**
	08-091872-13	GWS00424	09/17/08	**5400**	**200**	**13**
	08-12-1241-5	GWS00435	12/11/08	**3900**	**170**	**11**
	09-03-2499-8	GWS00466	03/26/09	**6200**	**140**	< 0.50
	09-06-2235-2	GWS00482	06/25/09	**2600**	**190**	**15**
	09-08-1897-6	GWS00503	08/21/09	**4200**	**67**	< 25
	09-12-1262-5	GWS00519	12/14/09	**1700**	**120**	< 10
	10-03-2055-7	GWS00547	03/25/10	**6200**	**61**	< 25
	10-06-1501-3	GWS00563	06/17/10	**4600**	**86**	**8.1**
	10-09-0315-7	GWS00592	09/03/10	**5600**	**110**	< 25
	10-11-1905-3	GWS00608	11/23/10	**3200**	**150**	< 12
	11-02-0848-8	GWS00637	02/11/11	**7000**	**74**	< 25
	11-05-1707-7	GWS00654	05/24/11	**4900**	**130**	< 25
	11-09-2055-7	GWS00683	09/28/11	**5300**	**210**	**7.9**
	11-12-1904-7	GWS00699	12/22/11	**3,400**	**93**	< 25
	12-06-0796-3	GWS00728	06/12/12	**5500**	**190**	**2.7**
	12-11-0625-2	GWS00772	11/08/12	**4600**	**86**	< 25
	13-06-0916-1	GWS00887	06/13/13	**5300**	**150**	< 25
	13-11-1203-7	GWS00956	11/14/13	**150**	**22**	**0.69**
	14-05-2159-5	GWS01027	05/29/14	**4900**	**170**	< 25
	14-12-0903-6	GWS01096	12/09/14	**5400**	**200**	**14**
	15-06-0557-6	GWS01163	06/05/15	**4500**	**220**	**19**
	15-11-1622-1	GWS-01267	11/20/15	**6300**	**380**	**26**
	16-06-2272-14	GWS01335	06/29/16	**6400**	**310**	**32**
	16-11-2660-9	GWS01430	11/30/16	**6500**	**310**	**25**
	17-08-0104-4	GWS01487	08/01/17	**4700**	**270**	**31**
	18-12-1183-10	GWS01603	12/12/18	**300**	**11**	<0.50
Well/Boring No.	**Lab ID**	**Sample ID**	**Date**	**TCE**	**cis-1,2-DCE**	**VC**
NCW-003C	06-06-0451-7	GWS00209	06/07/06	**3.0**	< 1.0	< 0.50
	06-12-0385-14	GWS00244	12/06/06	**6**	< 1.0	< 0.50
	07-03-1813-12	GWS00272	03/27/07	**5.8**	< 1.0	< 0.50
	07-06-1565-1	GWS00288	06/20/07	**1.8**	< 1.0	< 0.50
	07-10-0152-5	GWS00320	10/01/07	**1.2**	< 1.0	< 0.50
	07-12-1572-7	GWS00342	12/18/07	**1.3**	< 1.0	< 0.50
	06-03-2519-16	GWS00382	03/28/08	**36**	< 10	< 0.50
	08-06-2131-3	GWS00398	06/21/08	**510**	< 10	< 5.0
	08-09-1872-15	GWS00426	09/18/08	**19**	< 1.0	< 0.50
	08-12-1095-3	GWS00436	12/10/08	**3.9**	< 1.0	< 0.50
	09-03-2499-3	GWS00467	03/25/09	1.0	**1.7**	< 0.50
	09-06-2107-4	GWS00483	06/24/09	1.0	**1.3**	< 0.50

Appendix A Table A-2
Historical Groundwater Sample Analytical Results - TCE and Other Selected VOCs
Rohr - North Campus
(concentrations reported in µg/l)

Well/Boring No.	Lab ID	Sample ID	Date	TCE	cis-1,2-DCE	VC
	09-08-1897-1	GWS00504	08/20/09	**20**	**2.2**	< 0.50
	09-12-1128-3	GWS00520	12/11/09	1.0	**1.6**	< 0.50
	10-03-2055-2	GWS00548	03/24/10	1.0	**2.0**	< 0.50
	10-06-1385-3	GWS00564	06/16/10	1.0	**1.4**	< 0.50
	10-09-0315-2	GWS00593	09/02/10	1.0	**2.2**	< 0.50
	10-11-1801-4	GWS00609	11/22/10	1.0	**2.2**	< 0.50
	11-02-0848-4	GWS00638	02/11/11	1.0	**1.8**	< 0.50
	11-05-1707-4	GWS00655	05/24/11	1.0	**3.3**	< 0.50
	11-09-2055-2	GWS00687	09/28/11	1.5	**3.6**	< 0.50
	11-12-1904-5	GWS00700	12/22/11	**160**	**4.7**	< 0.50
	12-06-0699-2	GWS00729	06/11/12	1.0	< 1.0	< 0.50
	13-06-0831-3	GWS00888	06/12/13	1.0	< 1.0	< 0.50
	13-11-1203-6	GWS00957	11/14/13	1.0	< 1.0	< 0.50
	14-05-2159-4	GWS01028	05/29/14	1.0	< 1.0	< 0.50
	14-12-0903-4	GWS01097	12/09/14	1.0	< 1.0	< 0.50
	15-06-0557-4	GWS01164	06/05/15	1.0	< 1.0	< 0.50
	15-11-0841-3	GWS01268	11/11/15	1.0	< 1.0	< 0.50
	16-06-2038-10	GWS01336	06/28/16	**1.3**	**1.3**	< 0.50
	16-11-2514-5	GWS01412	11/29/16	1.0	< 1.0	< 0.50
Well/Boring No.	**Lab ID**	**Sample ID**	**Date**	**TCE**	**cis-1,2-DCE**	**VC**
NCW-004A	06-06-0236-1	GWS00198	06/05/06	< 1.0	< 1.0	< 0.50
	06-12-0272-6	GWS00234	12/05/06	< 1.0	< 1.0	< 0.50
	07-03-1813-16	GWS00276	03/28/07	< 1.0	< 1.0	< 0.50
	07-06-1567-3	GWS00294	06/20/07	**1.6**	< 1.0	< 0.50
	07-09-1986-4	GWS00312	09/27/07	< 1.0	< 1.0	< 0.50
	07-12-1572-11	GWS00346	12/18/07	< 1.0	< 1.0	< 0.50
	06-03-2519-5	GWS00371	03/27/08	< 1.0	< 1.0	< 0.50
	08-06-2026-4	GWS00386	06/18/08	< 1.0	< 1.0	< 0.50
	08-09-1872-5	GWS00416	09/16/08	< 1.0	< 1.0	< 0.50
	08-12-0962-1	GWS00437	12/09/08	< 1.0	< 1.0	< 0.50
	08-12-0962-2*	GWS00457	12/09/08	< 1.0	< 1.0	< 0.50
	09-03-2253-4	GWS00468	03/24/09	< 1.0	< 1.0	< 0.50
	09-06-2028-4	GWS00481	06/23/09	< 1.0	< 1.0	< 0.50
	09-08-1796-4	GWS00505	08/18/09	< 1.0	< 1.0	< 0.50
	09-12-1019-4	GWS00521	12/10/09	< 1.0	< 1.0	< 0.50
	10-03-1952-5	GWS00549	03/23/10	< 1.0	< 1.0	< 0.50
	10-06-1111-4	GWS00565	06/10/10	< 1.0	< 1.0	< 0.50
	10-09-0209-4	GWS00594	09/02/10	< 1.0	< 1.0	< 0.50
	10-11-1692-4	GWS00610	11/18/10	< 1.0	< 1.0	< 0.50
	10-11-1692-5*	GWS00616	11/18/10	< 1.0	< 1.0	< 0.50
	11-02-0739-4	GWS00639	02/09/11	< 1.0	< 1.0	< 0.50
	11-02-0739-5*	GWS00645	02/09/11	< 1.0	< 1.0	< 0.50
	11-05-1707-1	GWS00656	05/24/11	< 1.0	< 1.0	< 0.50
	11-09-1862-5	GWS00685	09/27/11	< 1.0	< 1.0	< 0.50
	11-12-1904-1	GWS00701	12/22/11	< 1.0	< 1.0	< 0.50
	12-06-0588-11	GWS00730	06/04/12	< 1.0	< 1.0	< 0.50
	12-11-1141-3	GWS00775	11/14/12	**4.3**	< 1.0	< 0.50
	13-06-0605-3	GWS00889	06/10/13	< 1.0	< 1.0	< 0.50
	13-11-2016-3	GWS00958	11/25/13	< 1.0	< 1.0	< 0.50
	14-06-0683-3	GWS01029	06/09/14	< 1.0	< 1.0	< 0.50
	14-12-0785-2	GWS01098	12/08/14	< 1.0	< 1.0	< 0.50
	15-06-0557-4	GWS01164	06/05/15	< 1.0	< 1.0	< 0.50
	15-11-0536-5	GWS01269	11/06/15	< 1.0	< 1.0	< 0.50
	16-06-2038-18	GWS01337	06/28/16	< 1.0	< 1.0	< 0.50
	16-11-2392-4	GWS01402	11/28/16	< 1.0	< 2.0	< 2.0
Well/Boring No.	**Lab ID**	**Sample ID**	**Date**	**TCE**	**cis-1,2-DCE**	**VC**
NCW-004B	06-06-0318-2	GWS00200	06/05/06	**14000**	**1,800**	**330**
	06-12-0476-3	GWS00246	12/06/06	**6600**	**970**	**98**
	07-03-1813-17	GWS00277	03/28/07	**1500**	**210**	**21**

Appendix A Table A-2
Historical Groundwater Sample Analytical Results - TCE and Other Selected VOCs
Rohr - North Campus
(concentrations reported in µg/l)

Well/Boring No.	Lab ID	Sample ID	Date	TCE	cis-1,2-DCE	VC
	07-06-1567-2	GWS00293	06/20/07	**16000**	**2000**	**370**
	07-10-0152-13	GWS00327	10/02/07	**17000**	**2100**	**430**
	07-12-1572-12	GWS00347	12/18/07	**1100**	**200**	**6.6**
	06-03-2519-6	GWS00372	03/27/08	**19000**	**2900**	**790**
	08-06-2026-5	GWS00387	06/18/08	**13000**	**2400**	**760**
	08-09-1872-11	GWS00422	09/17/08	**8700**	**2100**	**1500**
	08-12-1241-4	GWS00438	12/10/08	**11000**	**2400**	**1400**
	09-03-2499-6	GWS00469	03/26/09	**18000**	**3200**	**680**
	09-06-2235-1	GWS00484	06/24/09	**13000**	**2700**	**630**
	09-08-1897-4	GWS00506	08/21/09	**6000**	**1900**	**670**
	10-03-2055-5	GWS00550	03/25/10	**13000**	**2500**	**890**
	10-06-1501-1	GWS00566	06/16/10	**12000**	**1900**	**880**
	10-09-0315-5	GWS00595	09/03/10	**13000**	**2000**	**570**
	10-1-1905-2	GWS00611	11/23/10	**3000**	**700**	**320**
	11-02-0848-6	GWS00640	02/11/11	**15000**	**2300**	**520**
	11-05-1707-8	GWS00657	05/24/11	**12000**	**2300**	**520**
	11-09-2055-5	GWS00686	09/28/11	**10000**	**1700**	**340**
	12-06-0796-1	GWS00731	06/11/12	**1500**	**290**	**3.1**
	12-11-1141-4	GWS00774	11/14/12	**10000**	**2000**	**390**
	13-06-0605-1	GWS00890	06/10/13	**10000**	**2000**	**430**
	13-06-0605-2*	GWS00927	06/10/13	**12000**	**2400**	**510**
	13-11-2016-4	GWS00959	11/25/13	**11000**	**2200**	**460**
	14-06-0683-2	GWS01030	06/09/14	**8500**	**2200**	**440**
	14-12-0785-3	GWS01099	12/08/14	**7400**	**2200**	**280**
	15-06-0448-7	GWS01166	06/04/15	**9800**	**2100**	**320**
	15-11-1622-3	GWS01270	11/20/15	**3100**	**670**	**29**
	16-06-2272-12	GWS01338	06/29/16	**11000**	**2300**	**510**
	16-11-2659-8	GWS01432	11/30/16	**8600**	**1800**	**410**
	17-08-0103-4	GWS01488	08/01/17	**10000**	**2400**	**430**
	18-12-1183-4	GWS01604	12/12/18	**8700**	**2200**	**420**
Well/Boring No.	**Lab ID**	**Sample ID**	**Date**	**TCE**	**cis-1,2-DCE**	**VC**
NCW-004C	06-06-0318-1	GWS00199	06/05/06	< 1.0	< 1.0	< 0.50
	06-12-0476-1	GWS00245	12/06/06	**1.8**	< 1.0	< 0.50
	07-03-1813-19	GWS00278	03/28/07	**4**	< 1.0	< 0.50
	07-06-1567-1	GWS00293	06/20/07	< 1.0	< 1.0	< 0.50
	07-10-0152-11	GWS00326	10/02/07	< 1.0	< 1.0	< 0.50
	07-12-1572-14	GWS00348	12/18/07	**1.1**	< 1.0	< 0.50
	06-03-2519-7	GWS00373	03/27/08	**30**	< 1.0	< 0.50
	08-06-2026-6	GWS00388	06/18/08	**1100**	**51**	**18**
	08-09-1872-16	GWS00427	09/18/08	**10**	< 1.0	< 0.50
	08-12-1095-5	GWS00439	12/10/08	15	< 1.0	< 0.50
	09-03-2499-5	GWS00470	03/26/09	< 1.0	< 1.0	< 0.50
	09-06-2107-1	GWS00485	06/23/09	**3.7**	< 1.0	< 0.50
	09-06-2107-2*	GWS00487	06/23/09	**4.2**	< 1.0	< 0.50
	09-08-1897-3	GWS00507	08/20/09	**8.7**	< 1.0	< 0.50
	09-12-1262-2	GWS00523	12/14/09	< 1.0	< 1.0	< 0.50
	10-03-2055-4	GWS00551	03/25/10	**1.6**	< 1.0	< 0.50
	10-06-1385-5	GWS00567	06/16/10	< 1.0	< 1.0	< 0.50
	10-09-0315-4	GWS00596	09/03/10	< 1.0	< 1.0	< 0.50
	10-11-1801-1	GWS00612	11/19/10	**9.8**	< 1.0	< 0.50
	11-02-0848-5	GWS00641	02/11/11	< 1.0	< 1.0	< 0.50
	11-05-1707-2	GWS00658	05/24/11	< 1.0	< 1.0	< 0.50
	11-09-2055-4	GWS00682	09/28/11	< 1.0	< 1.0	< 0.50
	11-12-1904-2	GWS00703	12/22/11	< 1.0	< 1.0	< 0.50
	12-06-0699-1	GWS00732	06/11/12	< 1.0	< 1.0	< 0.50
	12-11-1141-1	GWS00776	11/14/12	**18**	< 1.0	< 0.50
	13-06-0527-3	GWS00891	06/07/13	< 1.0	< 1.0	< 0.50
	13-11-2016-2	GWS00960	11/20/13	< 1.0	< 1.0	< 0.50
	14-06-0683-1	GWS01031	06/09/14	< 1.0	< 1.0	< 0.50
	14-12-0785-1	GWS01100	12/08/14	< 1.0	< 1.0	< 0.50

Appendix A Table A-2
Historical Groundwater Sample Analytical Results - TCE and Other Selected VOCs
Rohr - North Campus
(concentrations reported in µg/l)

Well/Boring No.	Lab ID	Sample ID	Date	TCE	cis-1,2-DCE	VC
	15-06-0448-4	GWS01167	06/04/15	< 1.0	< 1.0	< 0.50
	15-11-0536-3	GWS01271	11/06/15	< 1.0	< 1.0	< 0.50
	16-06-2038-17	GWS01339	06/28/16	< 1.0	< 1.0	< 0.50
	16-11-2392-5	GWS01403	11/28/16	< 1.0	< 1.0	< 0.50
Well/Boring No.	**Lab ID**	**Sample ID**	**Date**	**TCE**	**cis-1,2-DCE**	**VC**
NCW-005A	06-06-0318-5	GWS00201	06/06/06	**14**	**3.1**	< 0.50
	06-12-0385-1	GWS00235	12/06/06	**22**	**11**	**2**
	07-03-1813-13	GWS00273	03/28/07	< 1.0	< 1.0	< 0.50
	07-06-1566-2	GWS00289	06/20/07	**1.2**	< 1.0	**0.71**
	07-09-1986-6	GWS00313	09/27/07	**4.6**	**1.8**	**0.57**
	07-12-1771-2	GWS00349	12/19/07	**28**	**16**	< 0.50
	07-12-1771-3*	GWS00350	12/19/07	**24**	14	< 0.50
	06-03-2519-8	GWS00374	03/27/08	< 1.0	< 1.0	< 0.50
	08-06-2026-7	GWS00389	06/18/08	**29**	**1.1**	< 0.50
	08-09-1872-7	GWS00418	09/16/08	**1.2**	**1.4**	< 0.50
	08-12-0962-5	GWS00440	12/09/08	< 1.0	< 1.0	< 0.50
	09-03-2253-6	GWS00471	03/25/09	< 1.0	< 1.0	< 0.50
	09-06-2028-6	GWS00486	06/23/09	< 1.0	< 1.0	< 0.50
	09-08-1796-6	GWS00508	08/20/09	< 1.0	< 1.0	< 0.50
	09-12-1019-6	GWS00524	12/10/09	< 1.0	< 1.0	< 0.50
	10-03-1952-7	GWS00552	03/24/10	< 1.0	< 1.0	< 0.50
	10-06-1111-7	GWS00568	06/11/10	< 1.0	< 1.0	< 0.50
	10-09-0209-7	GWS00597	09/02/10	< 1.0	< 1.0	< 0.50
	10-11-1692-7	GWS00613	11/19/10	< 1.0	< 1.0	< 0.50
	11-02-0739-7	GWS00642	02/10/11	< 1.0	< 1.0	< 0.50
	11-05-1539-1	GWS00661	05/24/11	< 1.0	< 1.0	< 0.50
	11-09-1862-7	GWS00688	09/27/11	< 1.0	< 1.0	< 0.50
	11-12-1787-6	GWS00704	12/22/11	< 1.0	< 1.0	< 0.50
	12-06-0588-7	GWS00733	06/08/12	< 1.0	< 1.0	< 0.50
	12-11-1141-6	GWS00777	11/15/12	**2.8**	< 1.0	< 0.50
	13-06-0706-2	GWS00892	06/11/13	< 1.0	< 1.0	< 0.50
	13-11-1644-2	GWS00961	11/20/13	< 1.0	< 1.0	< 0.50
	14-06-0773-1	GWS01032	06/10/14	< 1.0	< 1.0	< 0.50
	14-12-0662-2	GWS01101	12/05/14	< 1.0	< 1.0	< 0.50
	15-06-0448-2	GWS01168	06/04/15	< 1.0	< 1.0	< 0.50
	15-11-0841-2	GWS01272	11/11/15	< 1.0	< 1.0	< 0.50
	16-06-2038-16	GWS01340	06/27/16	< 1.0	< 1.0	< 0.50
	16-11-2514-1	GWS01404	11/29/16	< 1.0	< 1.0	< 0.50
Well/Boring No.	**Lab ID**	**Sample ID**	**Date**	**TCE**	**cis-1,2-DCE**	**VC**
NCW-005B	06-06-0318-6	GWS00202	06/06/06	**1600**	**21**	< 10
	06-12-0385-3	GWS00236	12/06/06	**3800**	**44**	< 0.50
	07-03-1813-14	GWS00274	03/28/07	**2100**	**29**	1
	07-06-1566-4	GWS00291	06/20/07	**2800**	**33**	0.9
	07-10-0152-9	GWS00324	10/02/07	**1400**	**17**	< 0.50
	07-12-1771-4	GWS00351	12/18/07	**2100**	**31**	< 0.50
	06-03-2519-10	GWS00376	03/27/08	**2600**	**31**	< 10
	08-06-2026-8	GWS00390	06/18/08	**2300**	**37**	< 10
	08-09-1872-12	GWS00423	09/17/08	**6900**	**83**	< 25
	08-12-1095-6	GWS00441	12/10/08	**1200**	**13**	< 0.50
	09-03-2499-7	GWS00472	03/26/09	**2800**	< 50	< 25
	09-06-2107-6	GWS00488	06/24/09	**1700**	**3.3**	**1.9**
	09-08-1897-5	GWS00509	08/21/09	**1300**	**34**	< 5.0
	09-12-1262-4	GWS00525	12/14/09	**2400**	**47**	< 5.0
	10-03-2055-6	GWS00553	03/25/10	**4500**	**190**	**89**
	10-06-1501-2	GWS00569	06/17/10	**2600**	**80**	**47**
	10-09-0315-6	GWS00598	09/03/10	**2100**	**81**	**200**
	10-11-1692-9	GWS00614	11/19/10	**2700**	**71**	**110**
	11-02-0848-7	GWS00643	02/11/11	**4300**	**90**	**120**
	11-05-1707-6	GWS00660	05/24/11	**4900**	**99**	**58**

Appendix A Table A-2
Historical Groundwater Sample Analytical Results - TCE and Other Selected VOCs
Rohr - North Campus
(concentrations reported in µg/l)

Well/Boring No.	Lab ID	Sample ID	Date	TCE	cis-1,2-DCE	VC
	11-09-2055-6	GWS00689	09/28/11	**6300**	**97**	**19**
	11-12-1904-4	GWS00705	12/22/11	**3400**	**75**	< 25
	12-06-0796-4	GWS00734	06/12/12	**7600**	**160**	**28**
	12-11-1141-7	GWS00778	11/15/12	**4500**	**90**	**13**
	13-06-0706-3	GWS00893	06/11/13	**4000**	**79**	**7.6**
	13-11-1644-1	GWS00962	11/20/13	**180**	**3.8**	< 1.0
	14-06-0683-5	GWS01033	06/09/14	**3700**	**80**	**9.6**
	14-12-0662-3	GWS01102	12/05/14	**5700**	**170**	**24**
	15-06-0448-3	GWS01169	06/04/15	**8600**	**280**	**41**
	15-11-1622-2	GWS01273	11/20/15	**9400**	**270**	**36**
	16-06-2272-15	GWS01341	06/29/16	**5200**	**140**	< 25
	16-11-2659-7	GWS01429	11/30/16	**3200**	**88**	< 12
	17-08-0103-3	GWS01486	08/01/17	**4200**	**100**	**16**
Well/Boring No.	**Lab ID**	**Sample ID**	**Date**	**TCE**	**cis-1,2-DCE**	**VC**
NCW-005C	06-06-0318-7	GWS00203	06/06/06	**3.5**	< 1.0	< 0.50
	06-12-0385-4	GWS00237	12/06/06	**6**	< 1.0	< 0.50
	07-03-1813-15	GWS00275	03/28/07	**4**	< 1.0	< 0.50
	07-06-1566-3	GWS00290	06/20/07	**1.5**	< 1.0	< 0.50
	07-10-0152-8	GWS00323	10/02/07	**1.6**	< 1.0	< 0.50
	07-12-1771-5	GWS00352	12/18/07	< 1.0	< 1.0	< 0.50
	06-03-2519-9	GWS00375	03/27/08	**7.8**	< 1.0	< 0.50
	08-06-2026-9	GWS00391	06/18/08	**290**	< 2.0	< 1.0
	08-091872-14	GWS00425	09/18/08	**30**	< 1.0	< 0.50
	08-12-1095-1	GWS00442	12/10/08	**2.0**	< 1.0	< 0.50
	09-03-2499-1	GWS00473	03/25/09	< 1.0	< 1.0	< 0.50
	09-06-2028-8	GWS00489	06/23/09	< 1.0	< 1.0	< 0.50
	09-08-1796-8	GWS00511	08/20/09	**1.4**	< 1.0	< 0.50
	09-12-1128-1	GWS00526	12/11/09	< 1.0	< 1.0	< 0.50
	10-03-1952-9	GWS00554	03/24/10	< 1.0	< 1.0	< 0.50
	10-06-1385-1	GWS00570	06/16/10	< 1.0	< 1.0	< 0.50
	10-09-0209-9	GWS00599	09/02/10	< 1.0	< 1.0	< 0.50
	10-11-1801-2	GWS00615	11/22/10	**1.3**	< 1.0	< 0.50
	11-02-0848-3	GWS00644	02/11/11	< 1.0	< 1.0	< 0.50
	11-05-1599-5	GWS00659	05/24/11	**2.8**	< 1.0	< 0.50
	11-09-1862-9	GWS00690	09/27/11	< 1.0	< 1.0	< 0.50
	11-12-1787-8	GWS00706	12/22/11	< 1.0	< 1.0	< 0.50
	12-06-0588-8	GWS00735	06/08/12	< 1.0	< 1.0	< 0.50
	12-11-1141-5	GWS00779	11/15/12	**1.9**	< 1.0	< 0.50
	13-06-0605-5	GWS00894	06/10/13	< 1.0	< 1.0	< 0.50
	13-11-1306-5	GWS00963	11/15/13	< 1.0	< 1.0	< 0.50
	14-06-0683-4	GWS01034	06/09/14	< 1.0	< 1.0	< 0.50
	14-12-0662-1	GWS01103	12/05/14	< 1.0	< 1.0	< 0.50
	15-06-0448-1	GWS01170	06/04/15	< 1.0	< 1.0	< 0.50
	15-11-0841-1	GWS01274	11/11/15	< 1.0	< 1.0	< 0.50
	16-06-2038-15	GWS01342	06/27/16	< 1.0	< 1.0	< 0.50
	16-11-2514-3	GWS01405	11/29/16	< 1.0	< 1.0	< 0.50
Well/Boring No.	**Lab ID**	**Sample ID**	**Date**	**TCE**	**cis-1,2-DCE**	**VC**
NCW-006A	12-11-1041-3	GWS00780	11/14/12	**11000**	**420**	**57**
	13-03-1045-3	GWS00800	03/11/13	**9800**	**480**	**85**
	13-06-0319-3	GWS00895	06/05/13	**7300**	**360**	**58**
	13-08-1052-4	GWS00929	08/14/13	**9200**	**420**	**60**
	13-11-1521-3	GWS00965	11/19/13	**9400**	**490**	**60**
	14-02-1850-3	GWS01000	02/26/14	**8800**	**530**	**76**
	14-05-2053-3	GWS01035	05/28/14	**9700**	**530**	**44**
	14-09-0078-3	GWS01068	09/02/14	**8500**	**620**	**91**
	14-12-0525-7	GWS01104	12/04/14	**9500**	**670**	**68**
	15-03-0776-6	GWS01137	03/10/15	**9700**	**660**	**74**
	15-06-0986-7	GWS01171	06/11/15	**12000**	**820**	**100**
	15-09-0267-6	GWS01206	09/02/15	**11000**	**780**	**78**

Appendix A Table A-2
Historical Groundwater Sample Analytical Results - TCE and Other Selected VOCs
Rohr - North Campus
(concentrations reported in µg/l)

Well/Boring No.	Lab ID	Sample ID	Date	TCE	cis-1,2-DCE	VC
	15-11-2001-1	GWS01275	11/25/15	**11000**	**610**	**58**
	16-04-1539-1	GWS01309	04/21/16	**10000**	**710**	**89**
	16-02-2272-16	GWS01343	06/29/16	**11000**	**680**	**95**
	16-11-2660-10	GWS01431	11/30/16	**11000**	**630**	**72**
	18-12-1183-5	GWS01606	12/12/18	**4500**	**210**	< 25
Well/Boring No.	**Lab ID**	**Sample ID**	**Date**	**TCE**	**cis-1,2-DCE**	**VC**
NCW-006B	12-11-1041-2	GWS00781	11/14/12	**1000**	**120**	**11**
	13-03-1045-2	GWS00801	03/11/13	**2000**	**88**	**12**
	13-06-0319-2	GWS00896	06/05/13	**1400**	**75**	**9.3**
	13-08-1052-3	GWS00930	08/14/13	**1400**	**78**	**10**
	13-11-1521-2	GWS00965	11/19/13	**1300**	**91**	**11**
	14-02-1850-2	GWS01001	02/26/14	**1600**	**120**	**22**
	14-05-2053-2	GWS01036	05/28/14	**1900**	**160**	**20**
	14-09-0078-2	GWS01069	09/02/14	**1700**	**230**	**46**
	14-12-0525-6	GWS01105	12/04/14	**1400**	**110**	**12**
	15-03-0776-5	GWS01138	03/10/15	**2200**	**240**	**33**
	15-06-0986-6	GWS01172	06/11/15	**2000**	**210**	**39**
	15-09-0267-5	GWS01207	09/02/15	**2400**	**200**	**28**
	15-11-1622-5	GWS01276	11/20/15	**670**	**29**	< 2.5
	16-04-1443-6	GWS01310	04/21/16	**1600**	**200**	**35**
	16-02-2272-11	GWS01344	06/29/16	**2300**	**250**	**52**
	16-08-1004-4	GWS01381	08/12/16	**2300**	**220**	**43**
	16-11-2659-4	GWS01427	11/30/16	**2200**	**190**	**25**
	18-12-1047-14	GWS01607	12/11/18	**2000**	**110**	**15**
Well/Boring No.	**Lab ID**	**Sample ID**	**Date**	**TCE**	**cis-1,2-DCE**	**VC**
NCW-006C	12-11-1041-1	GWS00782	11/14/12	**29**	**1.8**	< 0.50
	13-03-1045-1	GWS00802	03/11/13	**29**	**2.4**	< 0.50
	13-06-0319-1	GWS00897	06/05/13	**3**	< 1.0	< 0.50
	13-08-1052-2	GWS00931	08/14/13	**7.5**	< 1.0	< 0.50
	13-11-1521-1	GWS00966	11/19/13	**2.6**	< 1.0	< 0.50
	14-02-1850-1	GWS01002	02/26/14	**1.2**	< 1.0	**1.3**
	14-05-2053-1	GWS01037	05/28/14	1.0	< 1.0	**0.79**
	14-09-0078-1	GWS01070	09/02/14	1.0	< 1.0	**24**
	14-12-0525-5	GWSO1106	12/04/14	1.0	< 1.0	**7.3**
	15-03-0776-4	GWS01139	03/10/15	1.0	< 0.50	**3.4**
	15-06-0986-5	GWS01173	06/11/15	1.0	< 0.50	**7.9**
	15-09-0267-4	GWS01208	09/02/15	1.0	< 0.50	**4.1**
	15-11-1622-4	GWS01277	11/20/15	1.0	< 0.50	**4.9**
	16-04-1443-5	GWS01311	04/21/16	1.0	< 0.50	**2.8**
	16-06-2038-9	GWS01345	06/28/16	1.0	< 1.0	< 0.50
	16-08-0905-6	GWS01382	08/11/16	1.0	< 1.0	**1.7**
	16-11-2514-4	GWS01406	11/29/16	1.0	< 1.0	< 0.50
	18-12-0905-4	GWS01608	12/10/18	**0.64**	< 1.0	**9.6**
Well/Boring No.	**Lab ID**	**Sample ID**	**Date**	**TCE**	**cis-1,2-DCE**	**VC**
NCW-007A	12-11-0928-6	GWS00783	11/13/12	**60**	**4.5**	**0.59**
	13-03-1045-12	GWS00804	03/13/13	**14**	**120**	< 0.50
	13-06-0196-1	GWS00898	06/04/13	**3.7**	**190**	< 0.50
	13-08-0947-3	GWS00933	08/13/13	**4.0**	**200**	**0.73**
	13-11-1888-3	GWS00967	11/22/13	**6.1**	< 1.0	**1.3**
	14-02-1674-3	GWS01003	02/24/14	**4.7**	**250**	**1.1**
	14-06-0103-3	GWS01038	06/02/14	**4.7**	**160**	**0.94**
	14-09-0078-6	GWS01071	09/02/14	**6.5**	**160**	**1.2**
	14-12-0525-3	GWS01107	12/04/14	**5.3**	**140**	**0.8**
	15-03-0560-3	GWS01140	03/06/15	**3.5**	**110**	**0.57**
	15-06-0166-3	GWS01174	06/02/15	**5.0**	**170**	**0.84**
	15-09-0134-3	GWS01205	09/01/15	**5.2**	**110**	< 0.50
	15-11-1622-4	GWS01277	11/20/15	1.0	< 1.0	**4.9**

Appendix A Table A-2
Historical Groundwater Sample Analytical Results - TCE and Other Selected VOCs
Rohr - North Campus
(concentrations reported in µg/l)

Well/Boring No.	Lab ID	Sample ID	Date	TCE	cis-1,2-DCE	VC
	16-04-1443-2	GWS01312	04/21/16	**4.3**	**180**	**1.4**
	16-06-2272-3	GWS01346	06/29/16	**5.4**	**200**	**1.2**
	16-08-1005-4	GWS01383	08/12/16	**3.9**	**260**	**1.3**
	16-11-2515-6	GWS01418	11/29/16	**4.6**	**180**	**0.9**
	17-03-1593-3	GWS01461	03/21/17	**3.8**	**210**	**1.1**
	17-07-1990-2	GWS01473	07/31/17	**4.2**	**380**	**1.5**
	18-12-0906-5	GWS01610	12/10/18	**2**	**250**	< 1.0
Well/Boring No.	**Lab ID**	**Sample ID**	**Date**	**TCE**	**cis-1,2-DCE**	**VC**
NCW-007B	12-11-0928-5	GWS00784	11/13/12	< 1.0	< 1.0	< 0.50
	13-03-1045-11	GWS00805	03/13/13	< 1.0	< 1.0	< 0.50
	13-06-0196-2	GWS00899	06/04/13	< 1.0	< 1.0	< 0.50
	13-08-0947-2	GWS00932	08/13/13	< 1.0	< 1.0	< 0.50
	13-11-1888-2	GWS00968	11/22/13	< 1.0	< 1.0	< 0.50
	14-02-1674-2	GWS01004	02/24/14	< 1.0	< 1.0	< 0.50
	14-06-0103-2	GWS01039	06/02/14	< 1.0	< 1.0	< 0.50
	14-09-0078-5	GWS01072	09/02/14	< 1.0	< 1.0	< 0.50
	14-12-0525-2	GWS01108	12/04/14	< 1.0	< 1.0	< 0.50
	15-03-0560-2	GWS01141	03/06/15	< 1.0	< 0.50	< 0.50
	15-06-0166-2	GWS01175	06/02/15	< 1.0	< 0.50	< 0.50
	15-09-0134-2	GWS01204	09/01/15	< 1.0	< 1.0	< 0.50
	15-11-0536-2	GWS01279	11/06/15	< 1.0	< 1.0	< 0.50
	16-04-1345-1	GWS01313	04/21/16	< 1.0	< 1.0	< 0.50
	16-06-2038-3	GWS01347	06/27/16	< 1.0	< 1.0	< 0.50
	16-08-0905-4	GWS01384	08/11/16	< 1.0	< 1.0	< 0.50
	16-11-2515-5	GWS01411	11/29/16	< 1.0	< 1.0	< 0.50
	17-03-1470-6	GWS01452	03/20/17	< 1.0	< 1.0	< 0.50
Well/Boring No.	**Lab ID**	**Sample ID**	**Date**	**TCE**	**cis-1,2-DCE**	**VC**
NCW-007C	12-11-0928-4	GWS00785	11/13/12	< 1.0	< 1.0	< 0.50
	13-03-1045-10	GWS00806	03/13/13	< 1.0	< 1.0	< 0.50
	13-06-0196-3	GWS00900	06/04/13	< 1.0	< 1.0	< 0.50
	13-08-0947-1	GWS00934	08/13/13	< 1.0	< 1.0	< 0.50
	13-11-1888-1	GWS00969	11/22/13	< 1.0	< 1.0	< 0.50
	14-02-1674-1	GWS01005	02/24/14	< 1.0	< 1.0	< 0.50
	14-06-0103-1	GWS01040	06/02/14	< 1.0	< 1.0	< 0.50
	14-09-0078-4	GWS01073	09/02/14	< 1.0	< 1.0	< 0.50
	14-12-0525-1	GWS01109	12/04/14	< 1.0	< 1.0	< 0.50
	15-03-0560-1	GWS01142	03/06/15	< 1.0	< 0.50	< 0.50
	15-06-0166-1	GWS01176	06/02/15	< 1.0	< 0.50	< 0.50
	15-09-0134-1	GWS01209	09/01/15	< 1.0	< 1.0	< 0.50
	15-11-0536-1	GWS01283	11/06/15	< 1.0	< 1.0	< 0.50
	16-04-1345-2	GWS01314	04/21/16	< 1.0	< 1.0	< 0.50
	16-06-2038-2	GWS01348	06/27/16	< 1.0	< 1.0	< 0.50
	16-08-1005-4	GWS01385	08/11/16	< 1.0	< 1.0	< 0.50
	16-11-2515-4	GWS01410	11/29/16	< 1.0	< 1.0	< 0.50
	17-03-1470-5	GWS01451	03/20/17	< 1.0	< 1.0	< 0.50
Well/Boring No.	**Lab ID**	**Sample ID**	**Date**	**TCE**	**cis-1,2-DCE**	**VC**
NCW-008A	12-11-0928-3	GWS00786	11/13/12	**490**	**44**	**4.6**
	13-03-1045-9	GWS00807	03/12/13	**160**	**19**	< 0.50
	13-06-0416-4	GWS00901	06/06/13	**370**	**35**	**0.58**
	13-08-1052-1	GWS00935	08/14/13	**540**	**43**	< 2.5
	13-11-2016-4	GWS00970	11/22/13	**550**	**47**	< 2.5
	14-02-1742-1	GWS01006	02/25/14	**540**	**47**	**1.6**
	14-06-0209-1	GWS01041	06/03/14	**560**	**48**	< 2.5
	14-09-0181-3	GWS01074	09/03/14	**580**	**55**	< 2.5
	14-12-0662-6	GWS01110	12/05/14	**470**	**45**	**1.3**
	15-03-0560-6	GWS01143	03/06/15	**530**	**48**	**2.2**
	15-06-0649-3	GWS01177	06/08/15	**730**	**61**	**3.3**

Appendix A Table A-2
Historical Groundwater Sample Analytical Results - TCE and Other Selected VOCs
Rohr - North Campus
(concentrations reported in µg/l)

Well/Boring No.	Lab ID	Sample ID	Date	TCE	cis-1,2-DCE	VC
	15-09-0134-6	GWS01210	09/01/15	**700**	**59**	**3.4**
	15-11-1487-2	GWS01281	11/19/15	**750**	**63**	**4.2**
	16-04-1443-1	GWS01315	04/21/16	**550**	**64**	**6**
	16-06-2272-10	GWS01349	06/29/16	**770**	**68**	**9.9**
	16-08-1005-6	GWS01386	08/12/16	**680**	**63**	**8.2**
	16-11-2659-2	GWS01425	11/30/16	**670**	**66**	**5.3**
	17-03-1593-12	GWS01464	03/21/17	**15**	**6.1**	<0.50
	17-07-1990-3	GWS01475	07/31/17	**180**	**260**	**70**
	18-12-1047-3	GWS01610	12/11/18	**23**	**160**	**0.42**
Well/Boring No.	**Lab ID**	**Sample ID**	**Date**	**TCE**	**cis-1,2-DCE**	**VC**
NCW-008B	12-11-0928-2	GWS00787	11/13/12	**14**	< 1.0	< 0.50
	13-03-1045-8	GWS00808	03/12/13	**8.9**	< 1.0	< 0.50
	13-06-0527-2	GWS00902	06/07/13	**34**	**3.7**	**0.63**
	13-08-0947-5	GWS00936	08/13/13	**39**	**2.8**	< 0.50
	13-11-1888-4	GWS00971	11/22/13	**4.2**	< 1.0	< 0.50
	14-02-1674-5	GWS01007	02/24/14	**60**	**8.2**	< 0.50
	14-06-0103-5	GWS01042	06/02/14	**68**	**24**	< 0.50
	14-09-0181-2	GWS01075	09/03/14	**2.6**	**88**	**1.9**
	14-12-0662-5	GWS01111	12/05/14	**2.7**	**130**	**2.5**
	15-03-0560-5	GWS01144	03/06/15	**1.1**	**33**	**0.58**
	15-06-0649-2	GWS01178	06/08/15	**1.3**	**140**	**3.1**
	15-09-0134-5	GWS01211	09/01/15	1.0	**58**	**< 0.50**
	15-11-0949-4	GWS01282	11/12/15	2.5	**410**	**2.6**
	16-04-1345-3	GWS01316	04/21/16	1.0	**110**	**2.6**
	16-06-2038-8	GWS01350	06/28/16	1.0	**250**	**8.2**
	16-08-0905-7	GWS01387	08/16/16	2.0	**270**	**6.3**
	16-11-2515-7	GWS01417	11/29/16	**2.5**	**150**	**1.2**
	17-03-1593-10	GWS01460	03/21/17	2.0	**280**	**15**
	17-07-1990-1	GWS01472	07/31/17	2.0	**6.5**	< 1.0
	18-12-0905-5	GWS01611	12/10/18	2.0	**250**	**3.6**
Well/Boring No.	**Lab ID**	**Sample ID**	**Date**	**TCE**	**cis-1,2-DCE**	**VC**
NCW-008C	12-11-0928-1	GWS00788	11/13/12	< 1.0	< 1.0	< 0.50
	13-03-1045-7	GWS00809	03/12/13	< 1.0	< 1.0	< 0.50
	13-06-0527-1	GWS00903	06/07/13	< 1.0	< 1.0	< 0.50
	13-08-0947-4	GWS00937	08/13/13	< 1.0	< 1.0	< 0.50
	13-11-1888-5	GWS00972	11/22/13	< 1.0	< 1.0	< 0.50
	14-02-1674-4	GWS01008	02/24/14	< 1.0	< 1.0	< 0.50
	14-06-0103-4	GWS01043	06/02/14	< 1.0	< 1.0	< 0.50
	14-09-0181-1	GWS01076	09/03/14	< 1.0	< 1.0	< 0.50
	14-12-0662-4	GWS01112	12/05/14	< 1.0	< 1.0	< 0.50
	15-03-0560-4	GWS01145	03/06/15	< 1.0	< 0.50	< 0.50
	15-06-0649-1	GWS01179	06/08/15	< 1.0	< 0.50	< 0.50
	15-09-0134-4	GWS01212	09/01/15	< 1.0	< 0.50	< 0.50
	15-11-0432-3	GSW01280	11/05/15	< 1.0	< 1.0	< 0.50
	16-04-1345-4	GWS01317	04/21/16	< 0.50	< 1.0	< 1.0
	16-06-2038-6	GWS01351	06/28/16	< 0.50	< 1.0	< 1.0
	16-08-0905-8	GWS01388	08/11/16	< 1.0	< 1.0	< 0.50
	16-11-2515-3	GWS01409	11/29/16	< 1.0	< 1.0	< 0.50
	17-03-1470-7	GWS01453	03/20/17	< 1.0	**2.1**	< 0.50
Well/Boring No.	**Lab ID**	**Sample ID**	**Date**	**TCE**	**cis-1,2-DCE**	**VC**
NCW-009A	12-11-0854-5	GWS00789	11/12/12	**840**	**32**	< 1.0
	13-03-1045-6	GWS00810	03/12/13	**730**	**93**	< 0.50
	13-06-0416-3	GWS00904	06/06/13	**340**	**820**	**1.2**
	13-08-1147-3	GWS00938	08/15/13	**140**	**960**	< 0.50
	13-11-1441-3	GWS00973	11/18/13	**4.9**	**200**	**1.3**
	14-02-1742-4	GWS01009	02/25/14	**110**	**830/860**	**3**
	14-06-0209-4	GWS01044	06/03/14	**220**	**780**	**5.7**
	14-09-0181-6	GWS01077	09/03/14	**230**	**810**	**3.4**

Appendix A Table A-2
Historical Groundwater Sample Analytical Results - TCE and Other Selected VOCs
Rohr - North Campus
(concentrations reported in µg/l)

Well/Boring No.	Lab ID	Sample ID	Date	TCE	cis-1,2-DCE	VC
	14-12-0525-4	GWS01113	12/04/14	**160**	**600**	**2.8**
	15-03-0681-3	GWS01146	03/09/15	**170**	**430**	**0.97**
	15-06-0301-3	GWS01180	06/03/15	**280**	**460**	**1.0**
	15-09-0267-3	GWS01213	09/02/15	**300**	**450**	< 5.0
	15-11-1487-1	GWS01284	11/19/15	**110**	**400**	< 2.5
	16-04-1443-3	GWS01318	04/21/16	**110**	**210**	< 1.0
	16-06-2038-14	GWS01352	06/28/16	**150**	**230**	< 1.0
	16-08-1005-5	GWS01389	08/12/16	**150**	**210**	< 1.0
	16-11-2659-1	GWS01424	11/30/16	**230**	**160**	< 1.0
	17-03-1593-11	GWS01463	03/21/17	**170**	**200**	**1.8**
	17-08-0104-6	GWS01481	08/01/17	**43**	**350**	< 1.0
	18-12-1047-2	GWS01612	12/11/18	**28**	**280**	**0.93**
Well/Boring No.	**Lab ID**	**Sample ID**	**Date**	**TCE**	**cis-1,2-DCE**	**VC**
NCW-009B	12-11-0854-4	GWS00790	11/12/12	< 1.0	< 1.0	< 0.50
	13-03-1045-5	GWS00811	03/12/13	< 1.0	< 1.0	< 0.50
	13-06-0416-2	GWS00905	06/06/13	< 1.0	< 1.0	< 0.50
	13-08-1147-2	GWS00939	08/15/13	< 1.0	< 1.0	< 0.50
	13-11-1441-2	GWS00974	11/18/13	< 1.0	< 1.0	< 0.50
	14-02-1742-3	GWS01010	02/25/14	< 1.0	< 1.0	< 0.50
	14-06-0209-3	GWS01045	06/03/14	< 1.0	< 1.0	< 0.50
	14-09-0181-5	GWS01078	09/03/14	< 1.0	< 1.0	< 0.50
	14-12-0183-2	GWS01114	12/02/14	< 1.0	< 1.0	< 0.50
	15-03-0681-2	GWS01147	03/09/15	< 1.0	< 0.50	< 0.50
	15-06-0301-2	GWS01181	06/03/15	< 1.0	< 0.50	< 0.50
	15-09-0267-2	GWS01214	09/02/15	< 1.0	< 0.50	< 0.50
	15-11-0432-2	GSW01285	11/05/15	< 1.0	< 1.0	< 0.50
	16-04-1345-6	GWS01319	04/21/16	< 1.0	< 1.0	< 0.50
	16-06-2038-5	GWS01353	06/28/16	< 1.0	< 1.0	< 0.50
	16-08-1005-2	GWS01390	08/12/16	< 1.0	< 1.0	< 0.50
	16-11-2515-2	GWS01408	11/29/16	< 1.0	< 1.0	< 0.50
	17-03-1593-8	GWS01455	03/21/17	< 1.0	< 1.0	< 0.50
Well/Boring No.	**Lab ID**	**Sample ID**	**Date**	**TCE**	**cis-1,2-DCE**	**VC**
NCW-009C	12-11-0854-3	GWS00791	11/12/12	< 1.0	< 1.0	< 0.50
	13-03-1045-4	GWS00812	03/12/13	< 1.0	< 1.0	< 0.50
	13-06-0416-1	GWS00906	06/06/13	< 1.0	< 1.0	< 0.50
	13-08-1147-1	GWS00940	08/15/13	< 1.0	< 1.0	< 0.50
	13-11-1441-1	GWS00975	11/18/13	< 1.0	< 1.0	< 0.50
	14-02-1742-2	GWS01011	02/25/14	< 1.0	< 1.0	< 0.50
	14-06-0209-2	GWS01046	06/03/14	< 1.0	< 1.0	< 0.50
	14-09-0181-4	GWS01079	09/03/14	< 1.0	< 1.0	< 0.50
	14-12-0183-1	GWS01115	12/02/14	< 1.0	< 1.0	< 0.50
	15-03-0681-1	GWS01148	03/09/15	< 1.0	< 0.50	< 0.50
	15-06-0301-1	GWS01182	06/03/15	< 1.0	< 0.50	< 0.50
	15-09-0267-1	GWS01215	09/02/15	< 1.0	< 0.50	< 0.50
	15-11-0432-1	GSW01280	11/05/15	< 1.0	< 1.0	< 0.50
	16-04-1345-5	GWS01320	04/21/16	< 1.0	< 1.0	< 0.50
	16-06-2038-4	GWS01354	06/28/16	< 1.0	< 1.0	< 0.50
	16-08-1005-3	GWS01391	08/12/16	< 1.0	< 1.0	< 0.50
	16-11-2515-1	GWS01407	11/29/16	< 1.0	< 1.0	< 0.50
	17-03-1593-7	GWS01454	03/21/17	**2.6**	< 1.0	< 0.50
Well/Boring No.	**Lab ID**	**Sample ID**	**Date**	**TCE**	**cis-1,2-DCE**	**VC**
NCW-013A	12-11-0771-3	GWS00795	11/09/12	**740**	< 10	**5.4**
	13-03-1045-15	GWS00816	03/13/13	**590**	**11**	**2.7**
	13-06-1021-3	GWS00910	06/14/13	**560**	**7.2**	**3.2**
	13-08-1147-6	GWS00944	08/15/13	**550**	**13**	**2.8**
	13-11-1644-5	GWS00979	11/20/13	**510**	**13**	**3**
	17-02-1978-3	GWS01015	02/27/14	**600**	**14**	**2.7**
	14-05-2279-5	GWS01050	05/30/14	**1300**	**30**	**14**

Appendix A Table A-2
Historical Groundwater Sample Analytical Results - TCE and Other Selected VOCs
Rohr - North Campus
(concentrations reported in µg/l)

Well/Boring No.	Lab ID	Sample ID	Date	TCE	cis-1,2-DCE	VC
	14-09-0330-5	GWS01083	09/04/14	**750**	**41**	**16**
	14-12-0785-7	GWS01119	12/08/14	**430**	**16**	**6.3**
	15-03-0681-6	GWS01152	03/09/15	**460**	**13**	**5.3**
	15-06-1111-8	GWS01186	06/12/15	**380**	**13**	**4.5**
	15-09-0379-3	GWS01220	09/03/15	360	**12**	3.3
	15-11-1487-3	GWS01290	11/19/15	**370**	**10**	**3.7**
	16-04-1539-3	GWS01324	04/21/16	**120**	**5.2**	**1.6**
	16-06-2272-6	GWS01358	06/29/16	**97**	**4.1**	**1.5**
	16-08-1004-2	GWS01395	08/12/16	**84**	**3.6**	**1.2**
	16-11-2660-7	GWS01422	11/30/16	38	2.4	0.54
	17-03-1470-4	GWS01458	03/20/17	**19**	**1.3**	<0.50
	17-07-1990-4	GWS01476	07/31/17	**34**	**1.9**	**0.75**
	18-12-0906-3	GWS01613	12/10/18	**39**	**1.4**	**0.5**
Well/Boring No.	**Lab ID**	**Sample ID**	**Date**	**TCE**	**cis-1,2-DCE**	**VC**
NCW-013B	12-11-0771-2	GWS00796	11/09/12	**23**	< 1.0	< 0.50
	13-03-1045-14	GWS00817	03/13/13	**22**	< 1.0	< 0.50
	13-06-1021-2	GWS00911	06/14/13	**18**	< 1.0	< 0.50
	13-08-1147-5	GWS00945	08/15/13	**23**	< 1.0	< 0.50
	13-11-1644-4	GWS00980	11/20/13	**21**	< 1.0	< 0.50
	17-02-1978-2	GWS01016	02/27/14	**24**	< 1.0	< 0.50
	14-05-2279-4	GWS01051	05/30/14	**24**	< 1.0	< 0.50
	14-09-0330-6	GWS01084	09/04/14	**22**	< 1.0	< 0.50
	14-12-0785-6	GWS01120	12/08/14	**16**	< 1.0	< 0.50
	15-03-0681-5	GWS01153	03/09/15	**15**	< 0.50	< 0.50
	15-06-0649-5	GWS01187	06/08/15	**17**	< 0.50	< 0.50
	15-09-0379-2	GWS01221	09/03/15	**17**	< 1.0	< 0.50
	15-11-1086-4	GWS01291	11/13/15	**22**	< 1.0	< 0.50
	16-04-1539-4	GWS01325	04/21/16	**20**	< 1.0	< 0.50
	16-06-2272-5	GWS01359	06/29/16	**25**	< 1.0	< 0.50
	16-08-0905-2	GWS01396	08/16/16	**26**	< 1.0	< 0.50
	16-11-2660-1	GWS01416	11/30/16	**59**	**2.7**	< 0.50
	17-03-1593-2	GWS01459	03/21/17	**26**	< 1.0	< 0.50
	17-07-1990-5	GWS01477	07/31/17	**9.1**	< 1.0	< 0.50
	18-12-0906-4	GWS01614	12/10/18	**26**	**0.74**	< 0.50
Well/Boring No.	**Lab ID**	**Sample ID**	**Date**	**TCE**	**cis-1,2-DCE**	**VC**
NCW-013C	12-11-0771-1	GWS00797	11/09/12	**27**	**1.6**	< 0.50
	13-03-1045-13	GWS00818	03/13/13	**33**	**2**	< 0.50
	13-06-1021-1	GWS00912	06/14/13	**41**	**2.3**	< 0.50
	13-08-1147-4	GWS00946	08/15/13	**51**	**3.4**	< 0.50
	13-11-1644-3	GWS00981	11/20/13	**4.9**	< 1.0	< 0.50
	17-02-1978-1	GWS01017	02/27/14	**49**	**2.8**	< 0.50
	14-05-2279-3	GWS01052	05/30/14	**15**	**1.1**	< 0.50
	14-09-0330-4	GWS01085	09/04/14	**3.5**	< 1.0	< 0.50
	14-12-0785-5	GWS01121	12/08/14	**29**	**1.6**	< 0.50
	15-03-0681-4	GWS01154	03/09/15	**43**	**2.4**	< 0.50
	15-06-0649-4	GWS01188	06/08/15	**47**	**3.2**	< 0.50
	15-09-0379-1	GWS01222	09/03/15	**50**	**3.1**	< 0.50
	15-11-1381-1	GWS01292	11/18/15	**32**	**2.3**	< 0.50
	16-04-1539-5	GWS01326	04/21/16	**9.6**	< 1.0	< 0.50
	16-06-2272-54	GWS01360	06/29/16	**43**	**2.4**	< 0.50
	16-08-0905-3	GWS01397	08/11/16	**54**	**3**	< 0.50
	16-11-2660-3	GWS01419	11/30/16	**47**	**2.6**	< 0.50
	17-03-1470-3	GWS01457	03/20/17	**51**	**3**	< 0.50
	17-08-0104-2	GWS01479	08/01/17	**17**	**1.4**	< 0.50
	18-12-0905-7	GWS01615	12/10/18	**8.4**	**0.55**	< 0.50
Building 61 Area Wells:						
Well/Boring No.	**Lab ID**	**Sample ID**	**Date**	**TCE**	**cis-1,2-DCE**	**VC**
NCW-010	12-11-0625-4	GWS00792	11/08/12	**55**	**22**	**1.5**

Appendix A Table A-2
Historical Groundwater Sample Analytical Results - TCE and Other Selected VOCs
Rohr - North Campus
(concentrations reported in µg/l)

Well/Boring No.	Lab ID	Sample ID	Date	TCE	cis-1,2-DCE	VC
	13-03-1045-16	GWS00813	03/14/13	**12**	**12**	< 0.50
	13-06-0319-4	GWS00900	06/05/13	**50**	**8.6**	**1.4**
	13-08-1238-4	GWS00941	08/16/13	**11**	**14**	< 0.50
	13-11-1306-3	GWS00976	11/15/13	**3.8**	**7.6**	**0.75**
	17-02-1978-4	GWS01012	02/27/14	**9.5**	**12**	< 0.50
	14-05-2279-2	GWS01047	05/30/14	**3.6**	**7.3**	**0.56**
	14-09-0181-7	GWS01080	09/03/14	**4.9**	**7.4**	**0.56**
	14-12-1017-6	GWS01116	12/10/14	**2.3**	**6.2**	< 0.50
	15-03-0776-1	GWS01149	03/10/15	**2.3**	**6.3**	< 0.50
	15-06-0768-4	GWS01183	06/09/15	**2.8**	**6.2**	< 0.50
	15-09-0379-4	GWS01217	09/03/15	1.0	**3.7**	< 1.0
	15-11-1086-1	GWS01287	11/13/15	1.0	**5.1**	< 0.50
	16-04-1443-4	GWS01321	04/21/16	**2.8**	**5.2**	< 0.50
	16-06-2038-23	GWS01355	06/28/16	**1.1**	**5**	**1.1**
	16-08-0905-1	GWS01392	08/16/16	**2.9**	**5.5**	< 0.50
	16-11-2514-7	GWS01414	11/29/16	**1.3**	**4.9**	< 0.50
	17-03-1470-2	GWS01456	03/20/17	**16**	**6.2**	< 0.50
Well/Boring No.	**Lab ID**	**Sample ID**	**Date**	**TCE**	**cis-1,2-DCE**	**VC**
NCW-011	12-11-0508-4	GWS00793	11/07/12	**1600**	**470**	**44**
	13-03-1045-18	GWS00814	03/14/13	**2300**	**660**	**57**
	13-06-0916-3	GWS00908	06/13/13	**1700**	**660**	**35**
	13-08-1238-1	GWS00942	08/16/13	**2200**	**790**	**70**
	13-11-0949-4	GWS00977	11/12/13	**2600**	**900**	**51**
	14-02-1850-5	GWS01013	02/26/14	**2000**	**710**	**13**
	14-06-0209-5	GWS01048	06/03/14	**1800**	**770**	< 5.0
	14-09-0330-1	GWS01081	09/04/14	**2100**	**930**	**9.1**
	14-12-1017-5	GWS01117	12/10/14	**1800**	**690**	**14**
	15-03-0776-3	GWS01150	03/10/15	**2500**	**860**	< 10
	15-06-0768-6	GWS01184	06/09/15	**1900**	**820**	< 5.0
	15-09-0379-6	GWS01218	09/03/15	**2100**	860	**34**
	15-11-1487-5	GWS01288	11/19/15	**1600**	**640**	**18**
	16-04-1539-8	GWS01322	04/21/16	**1300**	**640**	< 5.0
	16-06-2272-9	GWS01356	06/30/16	**1700**	**690**	**30**
	16-08-1004-3	GWS01393	08/12/16	**1900**	**760**	**51**
	16-11-2659-6	GWS01428	11/30/16	**1700**	**900**	**81**
	17-03-1593-5	GWS01466	03/21/17	**480**	**320**	<2.5
	17-08-0103-2	GWS01480	08/01/17	**920**	**590**	**35**
	18-12-1047-11	GWS01628	12/11/18	**1600**	**720**	**57**
Well/Boring No.	**Lab ID**	**Sample ID**	**Date**	**TCE**	**cis-1,2-DCE**	**VC**
NCW-012	12-11-0508-5	GWS00794	11/07/12	77	**2.9**	< 0.50
	13-03-1045-17	GWS00815	03/14/13	**61**	**2.5**	< 0.50
	13-06-0916-4	GWS00909	06/13/13	**68**	**2.9**	< 0.50
	13-08-1238-3	GWS00943	08/16/13	**79**	**2.7**	< 0.50
	13-11-1306-4	GWS00978	11/15/13	**71**	**2.8**	< 0.50
	17-02-1978-5	GWS01014	02/27/14	**86**	**2.8**	< 0.50
	14-06-0209-7	GWS01049	06/03/14	**81**	**3.4**	< 0.50
	14-09-0330-3	GWS01082	09/04/14	**77**	**3**	< 0.50
	14-12-1017-4	GWS01118	12/10/14	**74**	**2.6**	< 0.50
	15-03-0776-2	GWS01151	03/10/15	**62**	**2.4**	< 0.50
	15-06-0768-5	GWS01185	06/09/15	**81**	**3.0**	< 0.50
	15-09-0379-5	GWS01219	09/03/15	**53**	**1.8**	< 0.50
	16-04-1443-8	GWS01323	04/21/16	**59**	**2.8**	< 0.50
	16-06-2038-12	GWS01357	06/28/16	72	**2.9**	< 0.50
	16-08-1004-1	GWS01394	08/12/16	**73**	**3.1**	< 0.50
	16-11-2660-5	GWS01421	11/30/16	**88**	**3.6**	< 0.50
	17-03-1539-4	GWS01462	03/21/17	**62**	**2.9**	< 0.50
	17-07-1991-5	GWS01483	07/31/17	**69**	**3.2**	< 0.50
	18-12-1047-10	GWS01629	12/11/18	**53**	**3.4**	**0.16**
Building 57 Area Wells:						

Appendix A Table A-2
Historical Groundwater Sample Analytical Results - TCE and Other Selected VOCs
Rohr - North Campus
(concentrations reported in µg/l)

Well/Boring No.	Lab ID	Sample ID	Date	TCE	cis-1,2-DCE	VC
Well/Boring No.	Lab ID	Sample ID	Date	TCE	cis-1,2-DCE	VC
MW57-1	06-06-0571-7	GWS00219	06/08/06	**35**	**7.3**	< 0.50
	06-12-0523-3	GWS00253	12/07/06	**540**	**36**	**2.5**
	07-06-1775-6	GWS00306	06/22/07	**95**	**18**	< 0.50
	07-12-1770-5	GWS00356	12/18/07	**290**	**100**	**3.7**
	08-06-2246-3	GWS00408	06/23/08	**39**	**8.7**	< 0.50
	08-12-1415-4	GWS00443	12/12/08	**330**	**110**	**5.6**
	09-06-2234-4	GWS00490	06/25/09	**69**	**110**	**9.9**
	09-12-1343-3	GWS00527	12/15/09	**95**	**140**	**3.4**
	10-06-1592-1	GWS00571	06/18/10	**15**	**1.5**	< 0.50
	10-11-2027-1	GWS00617	11/24/10	**12**	**9.7**	< 0.50
	11-05-1876-4	GWS00663	05/24/11	**10**	< 1.0	< 0.50
	11-12-1977-4	GWS00708	12/28/11	**8.2**	**6.1**	< 0.50
	12-06-0361-1	GWS00737	06/06/12	**17**	**7.3**	< 0.50
	12-10-1727-5	GWS00758	10/24/12	**62**	**100**	**23**
	13-06-1118-5	GWS00913	06/17/13	**29**	**31**	< 0.50
	13-11-1057-3	GWS00995	11/13/13	**210**	**100**	**6.7**
	14-06-0427-3	GWS01066	06/05/14	**48**	**73**	**11**
	14-12-1187-5	GWS01129	12/11/14	**300**	**130**	**7.5**
	15-06-0986-3	GWS 01189	06/11/15	**15**	**16**	**0.75**
	15-12-0183-3	GWS01293	12/02/15	**160**	**200**	**5.2**
	16-07-0203-3	GWS01361	07/05/16	**19**	**20**	< 0.50
	16-12-0148-6	GWS01437	12/01/16	**340**	**79**	**3.5**
Well/Boring No.	Lab ID	Sample ID	Date	TCE	cis-1,2-DCE	VC
MW57-2	06-06-0571-5	GWS00217	06/08/06	**1.2**	**5.4**	**4.3**
	06-12-0523-2	GWS00254	12/06/06	**1.9**	**11**	**3.9**
	07-06-1775-1	GWS00303	06/22/07	**16**	**11**	**5.0**
	07-12-1770-7	GWS00358	12/18/07	**1.5**	**7.9**	**5.1**
	08-06-2246-4	GWS00409	06/23/08	**9.6**	**6.8**	**5.6**
	08-12-1415-5	GWS00444	12/12/08	**21**	**15**	**5.0**
	09-06-2234-2	GWS00491	06/25/09	**5.7**	**11**	**8.3**
	09-12-1343-1	GWS00528	12/15/09	< 1.0	**7.2**	**6.7**
	10-06-1500-2	GWS00572	06/17/10	**1.3**	**6.1**	**4.7**
	10-11-1904-2	GWS00618	11/23/10	< 1.0	**6.1**	**5.8**
	11-05-1876-2	GWS00664	05/24/11	< 1.0	**5.4**	**10**
	11-12-1977-2	GWS00709	12/28/11	< 1.0	**3.8**	**11**
	12-06-0361-2	GWS00738	06/06/12	< 1.0	**3.7**	**20**
	12-10-1727-1	GWS00759	10/24/12	< 1.0	**3.3**	**9.5**
	13-06-1118-1	GWS00914	06/17/13	< 1.0	**3**	**17**
	13-11-1057-5	GWS00996	11/13/13	< 1.0	**3.5**	**8.4**
	14-06-0427-4	GWS01067	06/05/14	< 1.0	**2.4**	**8.3**
	14-12-1187-1	GWS01130	12/11/14	< 1.0	**3.4**	**12**
	15-06-0856-1	GWS 01190	06/10/15	1.3	**1.9**	**2.2**
	15-12-0183-1	GWS01294	12/02/15	< 1.0	**2.7**	**5.5**
	16-07-0100-2	GWS01362	06/29/16	**1.5**	**3.7**	**11**
	16-12-0148-4	GWS01435	12/01/16	< 1.0	**1.1**	**3.1**
	17-08-0104-7	GWS01490	08/01/17	< 1.0	**4.3**	**21**
	18-12-1183-13	GWS01630	12/12/18	< 10	< 5.0	< 5.0
Well/Boring No.	Lab ID	Sample ID	Date	TCE	cis-1,2-DCE	VC
MW57-3	06-06-0571-2	GWS00214	06/07/06	**1.5**	**3.5**	< 0.50
	06-12-0523-1	GWS00255	12/06/06	**8.3**	**6.7**	**1.4**
	07-06-1775-3	GWS00305	06/22/07	< 1.0	**6.4**	**0.53**
	07-12-1770-3	GWS00354	12/18/07	< 1.0	**4.1**	**1.2**
	08-06-2246-1	GWS00399	06/22/08	**5.1**	**3.4**	**0.82**
	08-12-1415-1	GWS00445	12/12/08	**6.7**	**5.6**	**1.7**
	09-06-2234-1	GWS00492	06/25/09	< 1.0	**5.9**	**1.3**
	09-12-1261-1	GWS00529	12/14/09	< 1.0	**2.5**	**0.90**
	10-06-1500-1	GWS00573	06/17/10	< 1.0	**1.6**	< 0.50

Appendix A Table A-2
Historical Groundwater Sample Analytical Results - TCE and Other Selected VOCs
Rohr - North Campus
(concentrations reported in µg/l)

Well/Boring No.	Lab ID	Sample ID	Date	TCE	cis-1,2-DCE	VC
	10-11-1904-1	GWS00619	11/23/10	< 1.0	**1.1**	< 0.50
	11-05-1876-1	GWS00665	05/24/11	< 1.0	**1.1**	< 0.50
	11-12-1977-3	GWS00710	12/28/11	< 1.0	**1.1**	< 0.50
	12-06-0361-3	GWS00739	06/06/12	< 1.0	**1.4**	< 0.50
	12-10-1727-2	GWS00760	10/24/12	< 5.0	< 5.0	< 2.5
	13-06-1118-3	GWS00915	06/17/13	< 5.0	**2.1**	< 2.5
	13-11-1057-1	GWS00984	11/13/13	< 1.0	**1.9**	< 0.50
	14-06-0427-1	GWS01055	06/05/14	< 1.0	**2.2**	< 0.50
	14-12-1187-2	GWS01131	12/11/14	< 1.0	< 1.0	**0.51**
	15-06-0856-2	GWS 01191	06/10/15	< 1.0	2.1	< 0.50
	15-11-2002-1	GWS01295	11/25/15	< 1.0	< 1.0	< 0.50
	16-07-0203-1	GWS01363	07/05/16	< 1.0	**1.2**	< 0.50
	16-12-0148-2	GWS01434	12/01/16	< 1.0	< 1.0	< 0.50
Well/Boring No.	**Lab ID**	**Sample ID**	**Date**	**TCE**	**cis-1,2-DCE**	**VC**
MW57-5	06-06-0571-6	GWS00218	06/08/06	**9.2**	**16**	**30**
	06-12-0523-4	GWS00256	12/07/06	< 1.0	**1.7**	**3.4**
	07-06-1775-4	GWS00307	06/22/07	**1.1**	**7.0**	**5.7**
	07-12-1770-6	GWS00357	12/18/07	< 1.0	**3.2**	**3.4**
	08-06-2246-6	GWS00411	06/23/08	**5**	**1.9**	**4.2**
	08-12-1415-3	GWS00447	12/12/08	**70**	**34**	< 0.50
	09-06-2234-3	GWS00493	06/25/09	< 1.0	< 1.0	**1.3**
	09-12-1343-2	GWS00530	12/15/09	< 1.0	< 1.0	< 0.50
	10-06-1500-3	GWS00574	06/17/10	< 1.0	< 1.0	**0.55**
	10-11-1904-3	GWS00620	11/23/10	< 1.0	< 1.0	< 0.50
	11-05-1876-3	GWS00666	05/24/11	< 1.0	**1.6**	**0.71**
	11-12-1977-1	GWS00711	12/28/11	< 1.0	< 1.0	< 0.50
	12-06-0361-4	GWS00740	06/06/12	< 1.0	< 1.0	< 0.50
	12-10-1727-3	GWS00761	10/24/12	< 1.0	< 1.0	**0.59**
	13-06-1118-2	GWS00916	06/17/13	< 1.0	< 1.0	< 0.50
	13-11-1057-2	GWS00985	11/13/13	< 1.0	< 1.0	**0.74**
	14-06-0427-2	GWS01056	06/05/14	< 1.0	< 1.0	< 0.50
	14-12-1187-3	GWS01132	12/11/14	< 1.0	< 1.0	**0.59**
	15-06-0986-1	GWS 01192	06/11/15	< 1.0	< 1.0	**1.4**
	15-11-2002-2	GWS01296	11/25/15	< 1.0	< 1.0	**0.75**
	16-07-0100-3	GWS01364	07/01/16	< 1.0	< 0.50	**1.1**
	16-12-0148-1	GWS01433	12/01/16	< 1.0	< 0.50	**0.83**
Well/Boring No.	**Lab ID**	**Sample ID**	**Date**	**TCE**	**cis-1,2-DCE**	**VC**
MW57-6	06-06-0571-1	GWS00213	06/07/06	**7100**	**13000**	**4000**
	06-12-0523-6	GWS00257	12/07/06	**6100**	**7600**	**1300**
	06-12-0848-1	GWS00257	12/13/06	**20000**	**11000**	**1900**
	07-06-1775-5	GWS00308	06/22/07	**120**	**660**	**230**
	07-12-1770-2	GWS00353	12/18/07	**15000**	**8800**	**880**
	08-06-2246-2	GWS00400	06/22/08	**380**	**560**	**230**
	08-12-1415-2	GWS00448	12/12/08	**7700**	**17000**	**3100**
	09-06-2464-2	GWS00494	06/29/09	**5700**	**6700**	**2600**
	09-12-1343-5	GWS00531	12/15/09	**9500**	**8400**	**1800**
	10-06-1592-3	GWS00575	06/18/10	**30**	**49**	**16**
	10-11-2027-3	GWS00621	11/24/10	**2100**	**2100**	**910**
	11-05-1876-6	GWS00667	05/24/11	**67**	**52**	**26**
	11-12-1977-6	GWS00712	12/28/11	**2000**	**2200**	**560**
	12-06-0361-5	GWS00741	06/06/12	**210**	**150**	**90**
	12-10-1727-6	GWS00762	10/24/12	**8400**	**8000**	**2900**
	13-06-1118-6	GWS00917	06/17/13	**62**	**7.1**	**39**
	13-11-1203-1	GWS00986	11/14/13	**3400**	**7000**	**1600**
	14-06-0427-6	GWS01057	06/05/14	**1900**	**3100**	**1800**
	14-12-1187-6	GWS01133	12/11/14	**18000**	**13000**	**3000**
	15-06-0986-4	GWS01193	06/11/15	**240**	**150**	**120**
	15-12-0183-4	GWS01297	12/02/15	**11000**	**7400**	**1900**
	16-07-0203-5	GWS01365	07/05/16	**690**	**380**	**310**

Appendix A Table A-2
Historical Groundwater Sample Analytical Results - TCE and Other Selected VOCs
Rohr - North Campus
(concentrations reported in µg/l)

Well/Boring No.	Lab ID	Sample ID	Date	TCE	cis-1,2-DCE	VC
	16-12-0148-7	GWS01438	12/01/16	**8400**	**7000**	**1600**
	17-08-0104-8	GWS01491	08/01/17	**520**	**250**	**140**
	18-12-1183-6	GWS01632	12/12/18	**9200**	**8700**	**1600**
Well/Boring No.	**Lab ID**	**Sample ID**	**Date**	**TCE**	**cis-1,2-DCE**	**VC**
MW57-7	06-06-0571-3	GWS00215	06/08/06	< 1.0	**53**	**500**
	06-06-0571-4*	GWS00216	06/08/06	< 1.0	**50**	**510**
	06-12-0523-5	GWS00258	12/07/06	**7**	**55**	**160**
	07-06-1775-2	GWS00304	06/22/07	< 5.0	**110**	**490**
	07-12-1770-4	GWS00355	12/19/07	< 1.0	**4**	**1.1**
	07-12-1770-8*	GWS00359	12/19/07	< 1.0	**64**	**330**
	08-06-2246-5	GWS00410	06/23/08	**4.2**	**33**	**350**
	08-12-1415-6	GWS00446	12/12/08	12	**42**	**350**
	09-06-2464-1	GWS00495	06/29/09	< 1.0	**32**	**230**
	09-12-1343-4	GWS00532	12/15/09	< 2.0	**17**	**250**
	10-06-1592-2	GWS00576	06/18/10	< 2.0	**48**	**350**
	10-11-2027-2	GWS00622	11/24/10	< 2.0	**28**	**300**
	11-05-1876-5	GWS00668	05/24/11	< 2.0	**46**	**290**
	11-12-1977-5	GWS00713	12/28/11	< 1.0	**41**	**220**
	12-06-0361-6	GWS00742	06/06/12	< 5.0	**53**	**350**
	12-10-1727-4	GWS00763	10/24/12	< 5.0	**63**	**320**
	13-06-1118-4	GWS00925	06/17/13	< 5.0	**61**	**280**
	13-11-1057-4	GWS00994	11/13/13	**15**	**67**	**6.4**
	14-06-0427-5	GWS01065	06/05/14	**12**	**64**	**160**
	14-12-1187-4	GWS01134	12/11/14	**6.1**	**42**	**3.7**
	15-06-0986-2	GWS 01194	06/11/15	**9.1**	**46**	**110**
	15-12-0183-2	GWS01298	12/02/15	**7.4**	**43**	**24**
	16-07-0203-2	GWS01366	07/05/16	**9.1**	**47**	**130**
	16-12-0148-5	GWS01436	12/01/16	**5.8**	**51**	**19**

Notes: Detected compounds are indicated in **BOLD**.
0.35 Red - Estimated concentration between the reporting limit and method detection limit, so "J"-flagged
1.0 Green - Not detected at the concentration shown
12/14/09 NWC-004B and 11/18/15 NWC-012 - did not include anomolous non-detect point in TCE graphs
The "<" symbol indicates that the constituent was not detected above the detection limit specified.
µg/L: micrograms per liter
*: Duplicate Sample

FIGURES/GRAPHS

FIGURE A-1
NCW-001C (ZONE LB) TCE TRENDS
August 2019

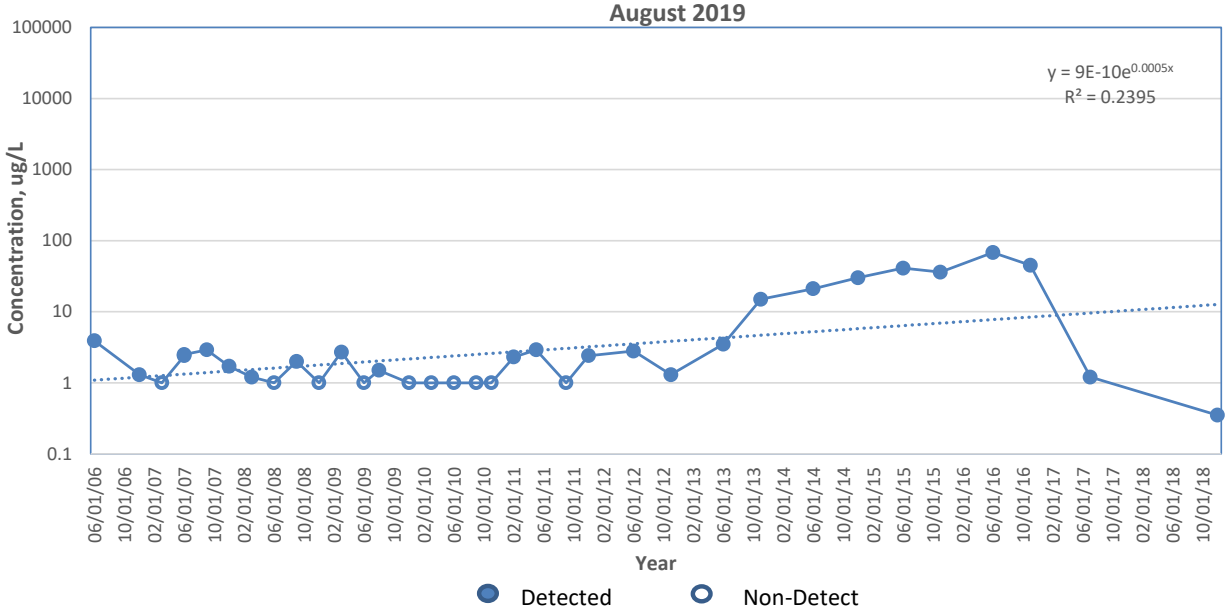


FIGURE A-2
NCW-002A (ZONE A) TCE TRENDS
August 2019

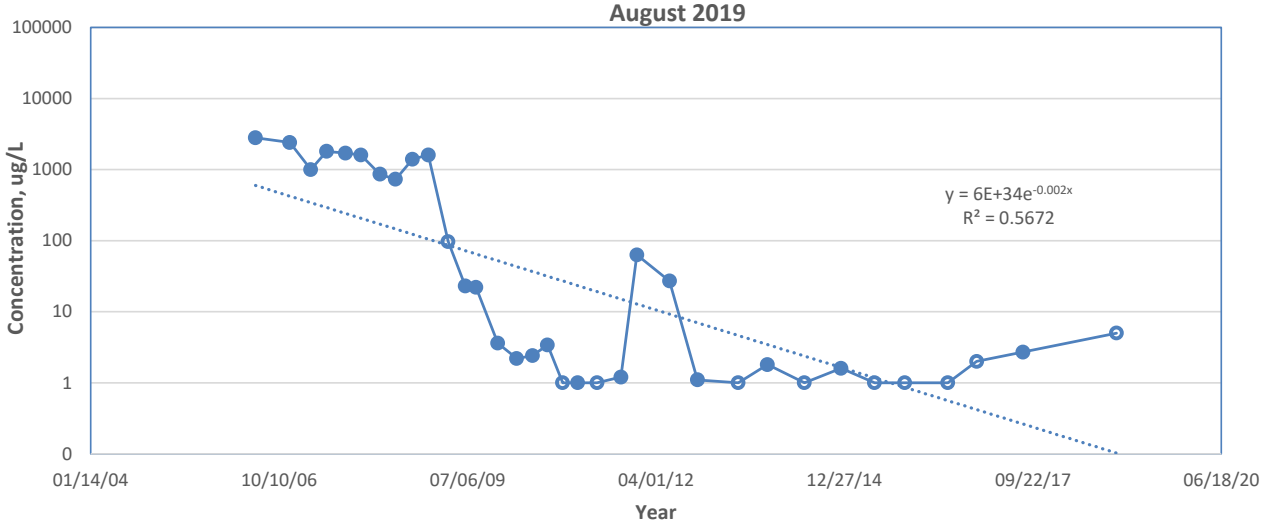
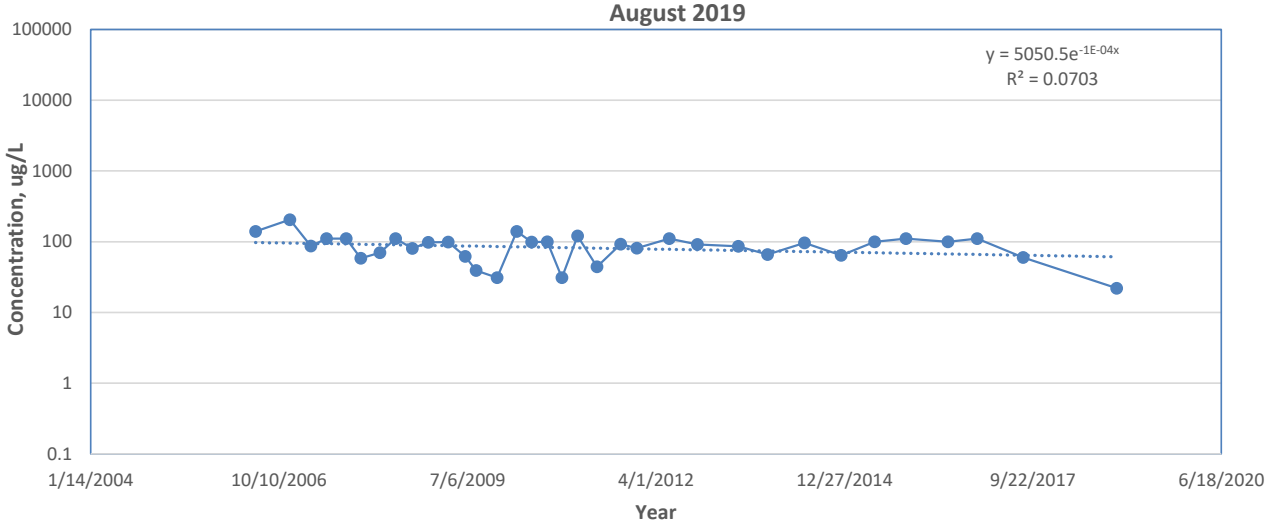


FIGURE A-3
NCW-002B (ZONE UB) TCE TRENDS
August 2019



Where collected, duplicate results were averaged with the unique sample

FIGURE A-4
NCW-003A (ZONE A) TCE TRENDS
August 2019

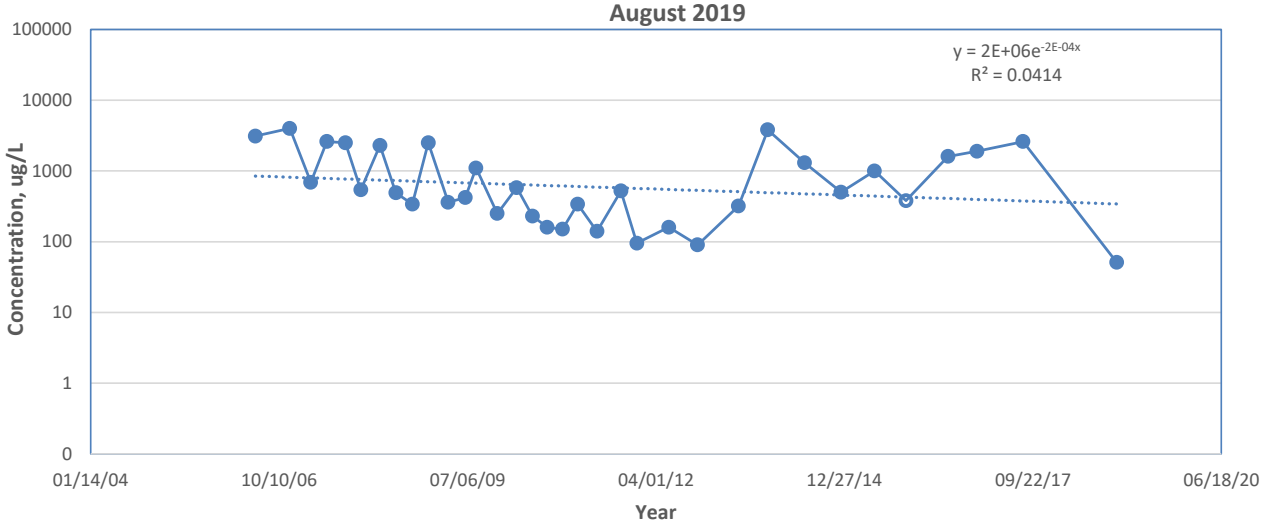


FIGURE A-5
NCW-003B (ZONE UB) TCE TRENDS
August 2019

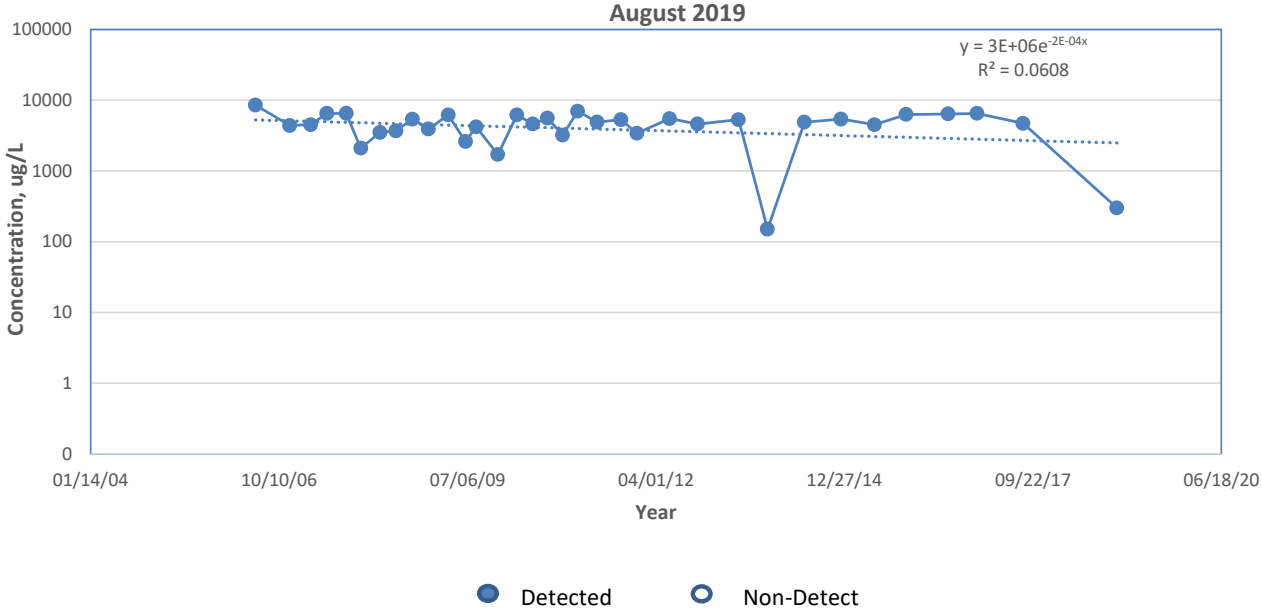


FIGURE A-5
NCW-003B (ZONE UB) TCE TRENDS
August 2019

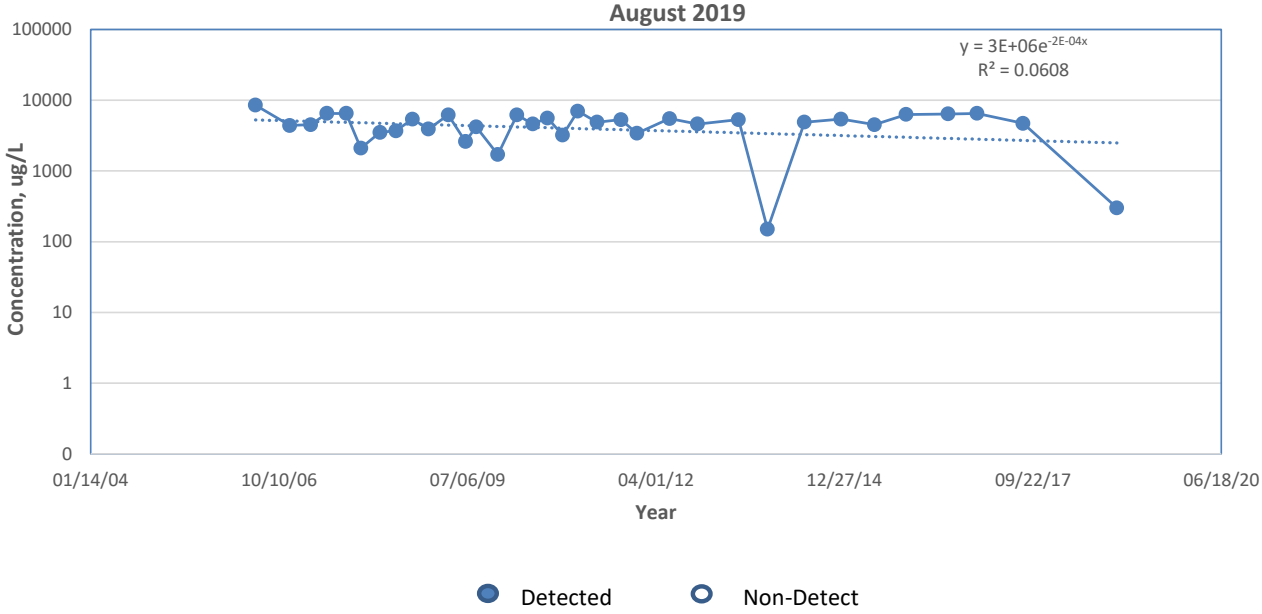
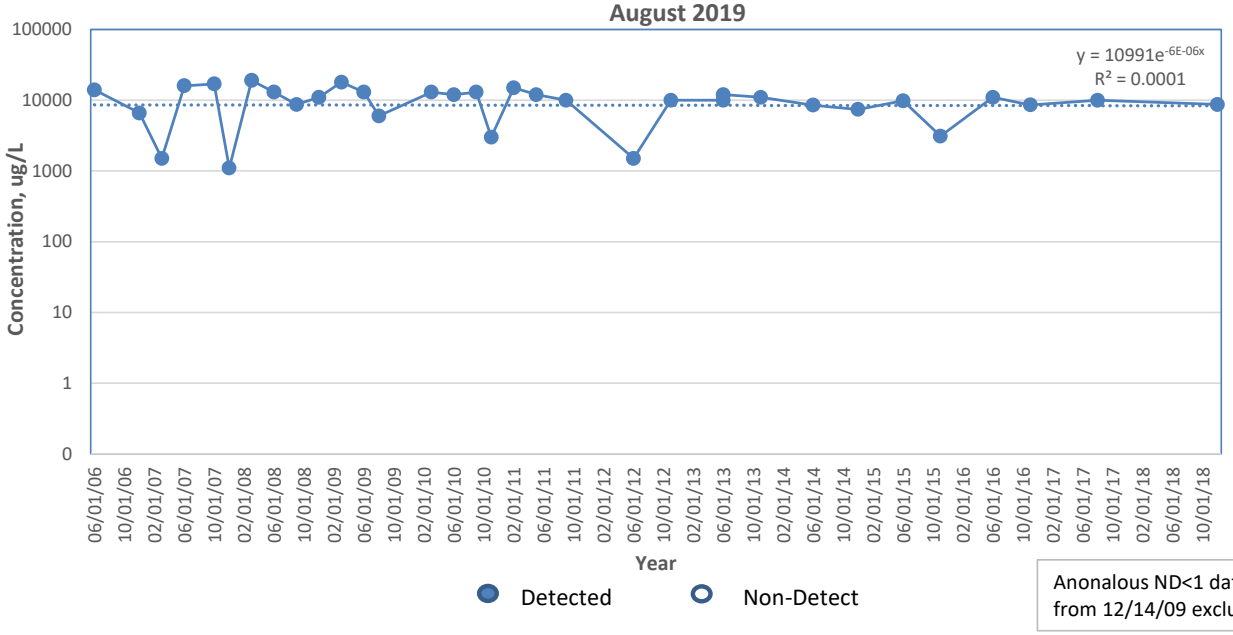


FIGURE A-6
NCW-004B (ZONE UB) TCE TRENDS
August 2019



Anonalous ND<1 data point from 12/14/09 excluded

FIGURE A-7
NCW-005B (ZONE UB) TCE TRENDS
August 2019

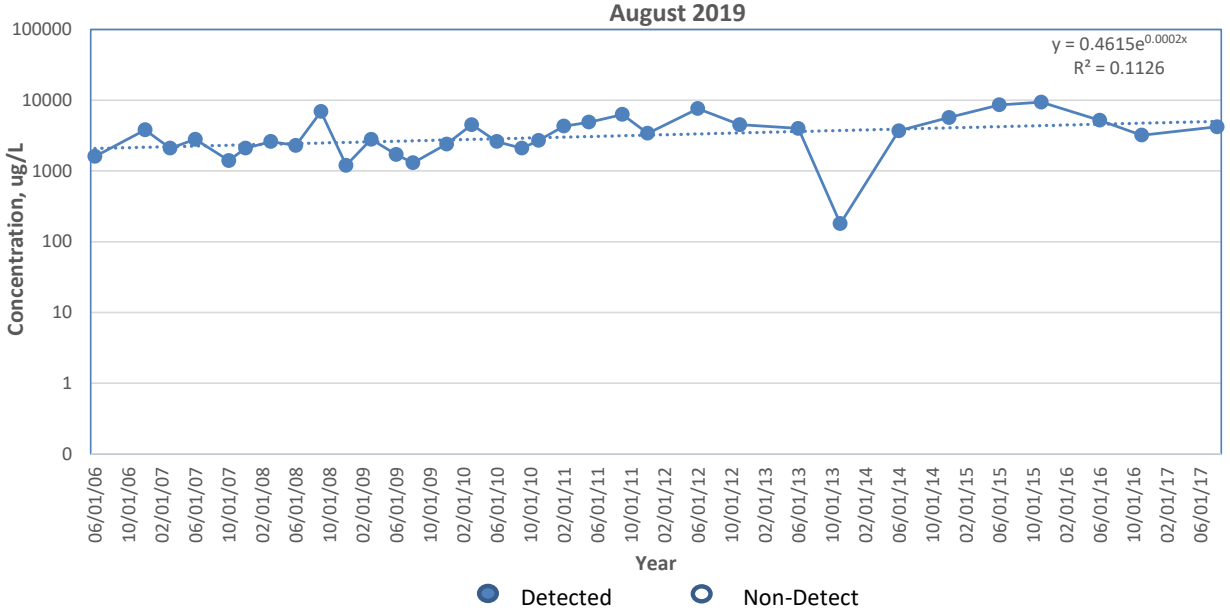


FIGURE A-8
NCW-006A (ZONE UB) TCE TRENDS
August 2019

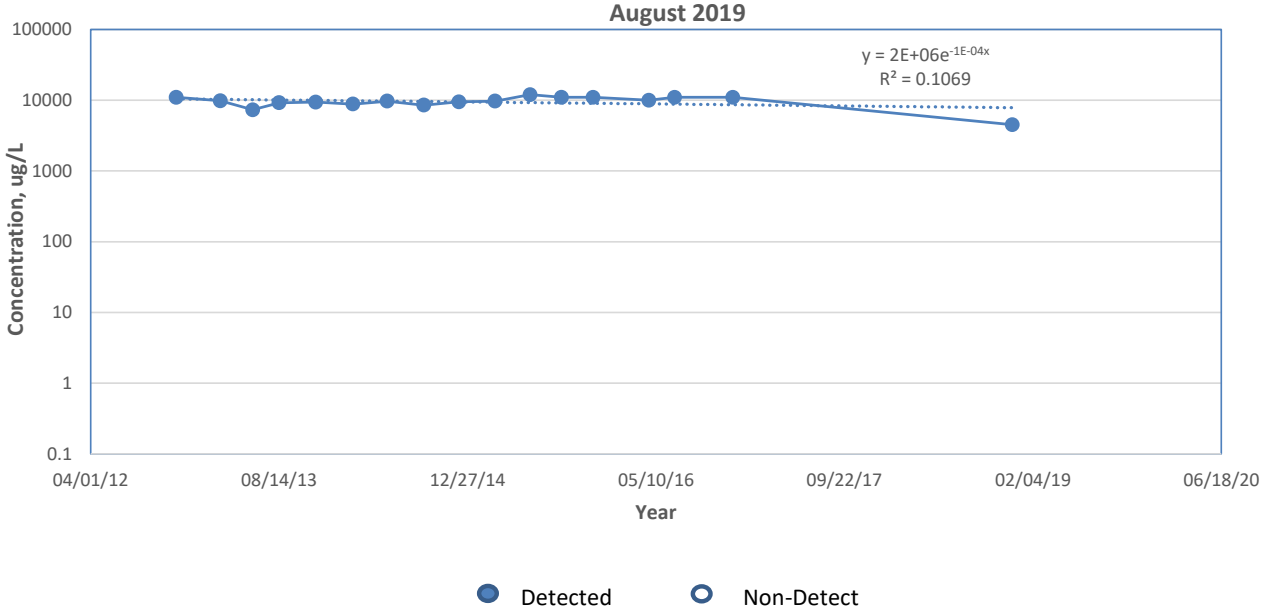


FIGURE A-9
NCW-006B (ZONE UB) TCE TRENDS
August 2019

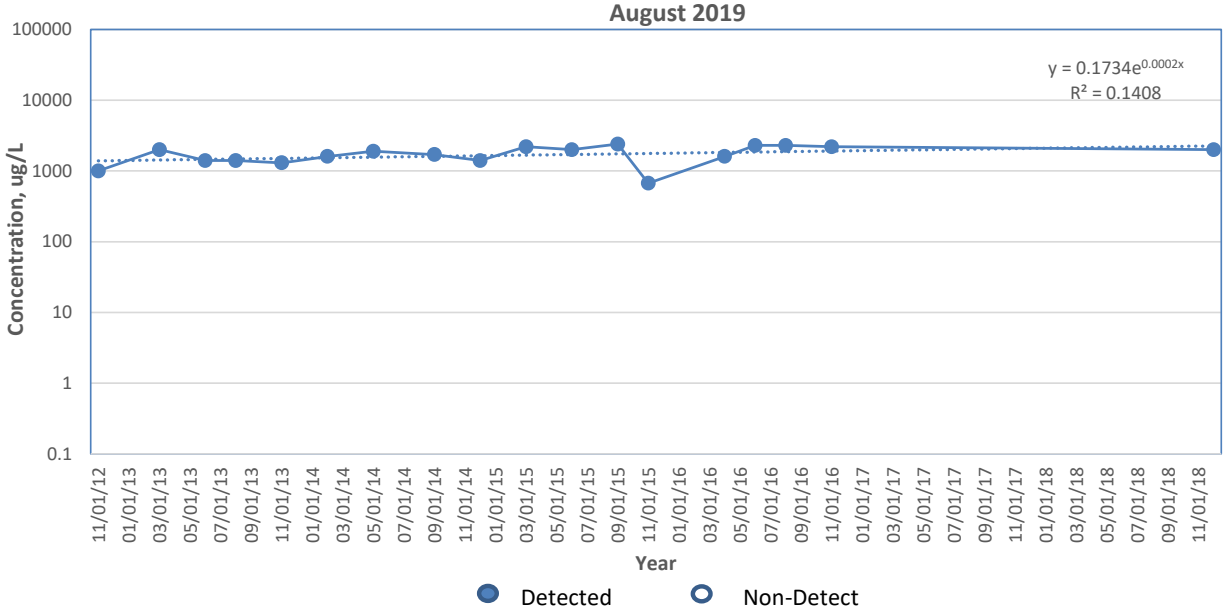


FIGURE A-10
NCW-006C (ZONE LB) TCE TRENDS
August 2019

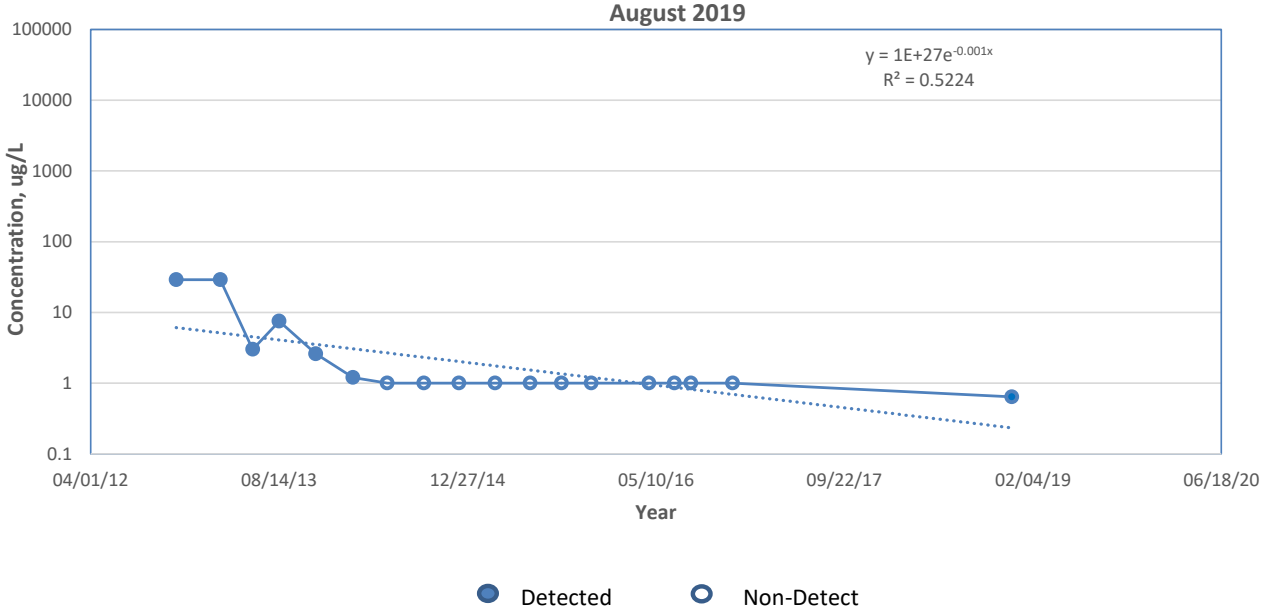


FIGURE A-11
NCW-007A (ZONE UB) TCE TRENDS
August 2019

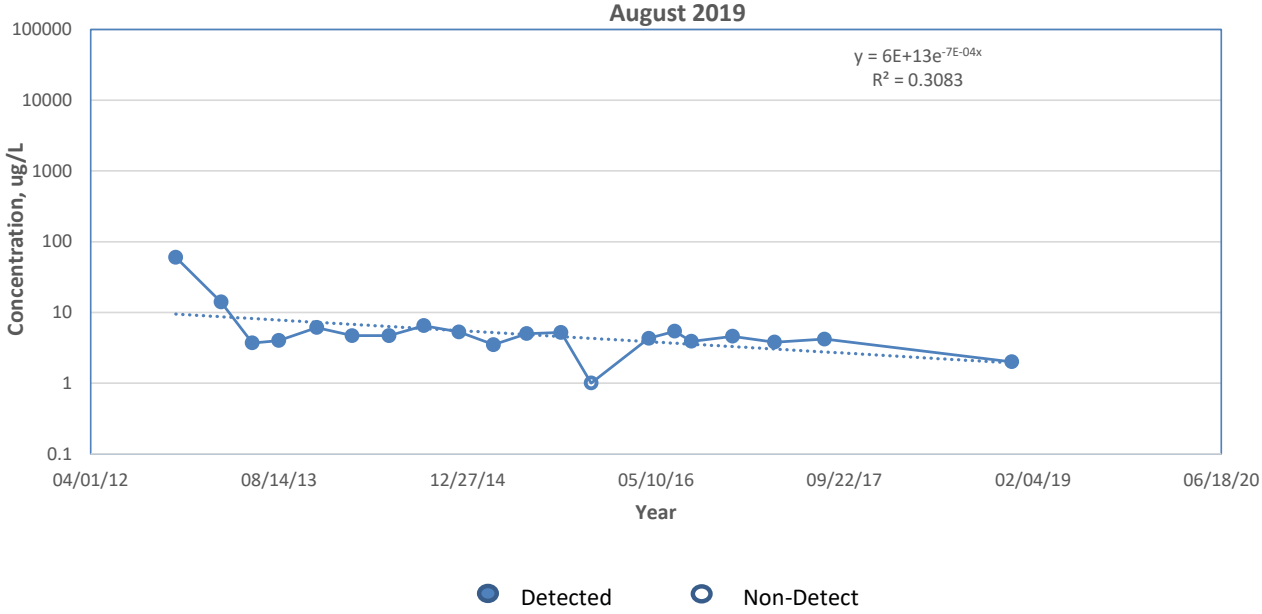


FIGURE A-12
NCW-008A (ZONE UB) TCE TRENDS
August 2019

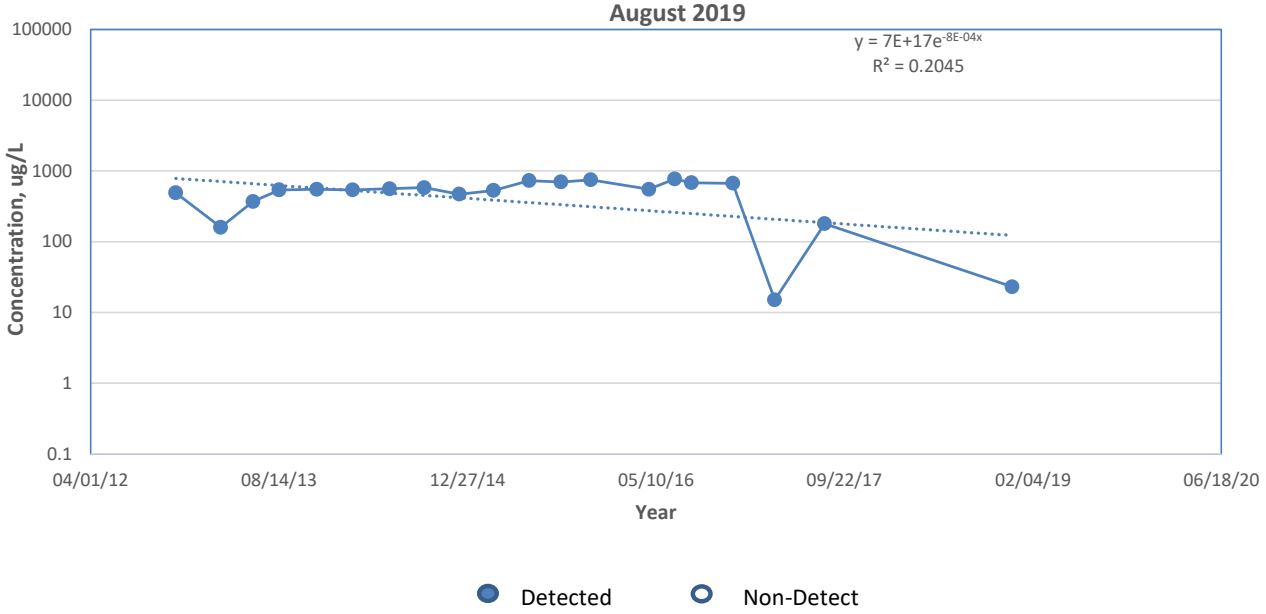


FIGURE A-13
NCW-008B (ZONE UB) TCE TRENDS
August 2019

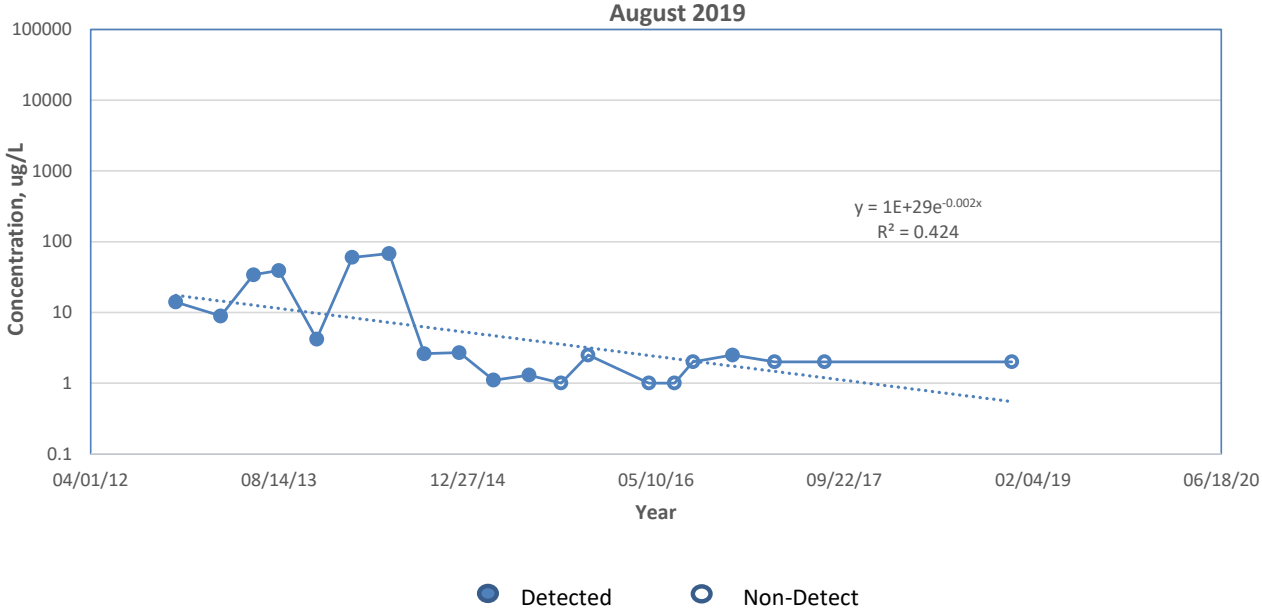


FIGURE A-14
NCW-009A (ZONE UB) TCE TRENDS
August 2019

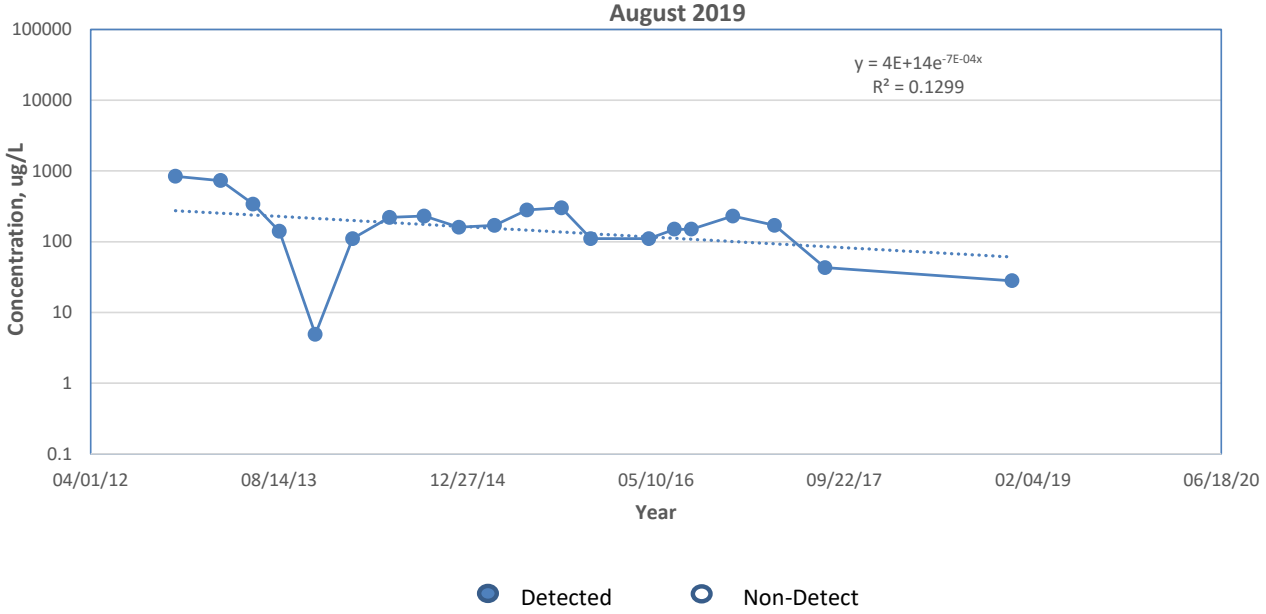


FIGURE A-15
NCW-013A (ZONE A) TCE TRENDS
August 2019

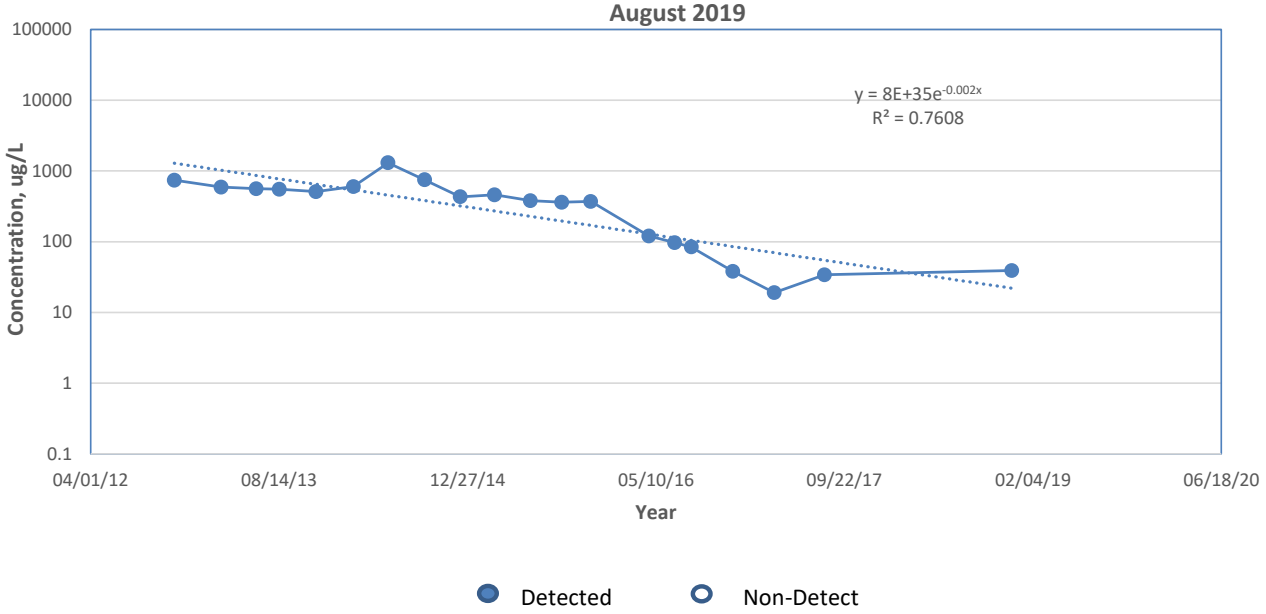


FIGURE A-16
NCW-013B (ZONE UB) TCE TRENDS
August 2019

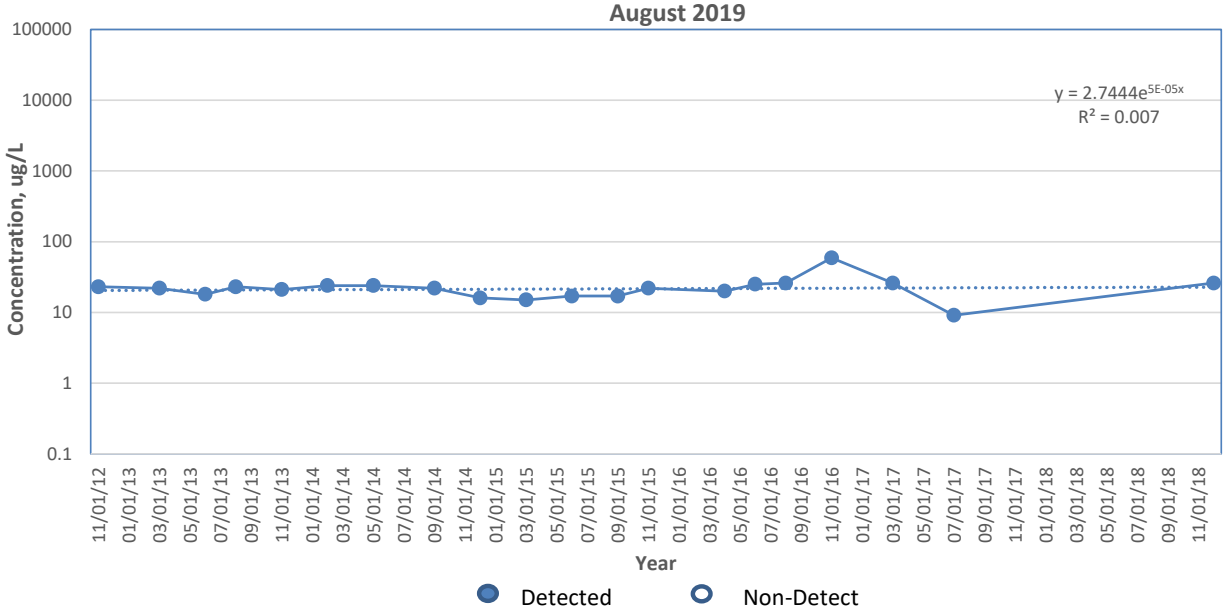


FIGURE A-17
NCW-013C (ZONE LB) TCE TRENDS
August 2019

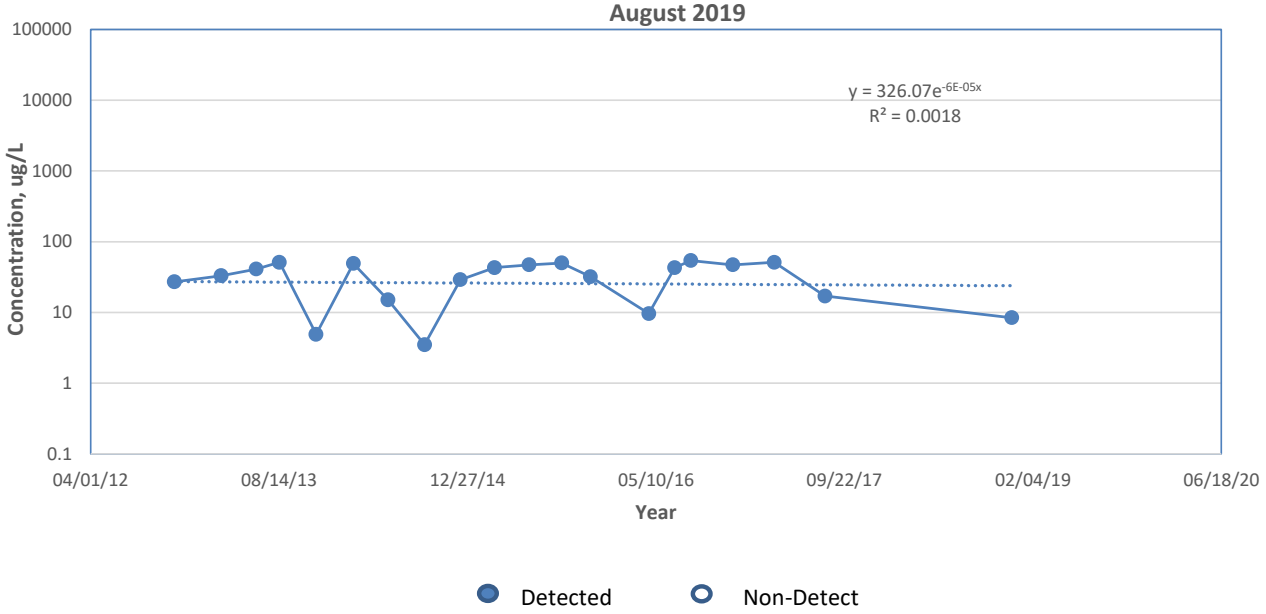


FIGURE A-18
NCW-010 (ZONE A) TCE TRENDS
August 2019

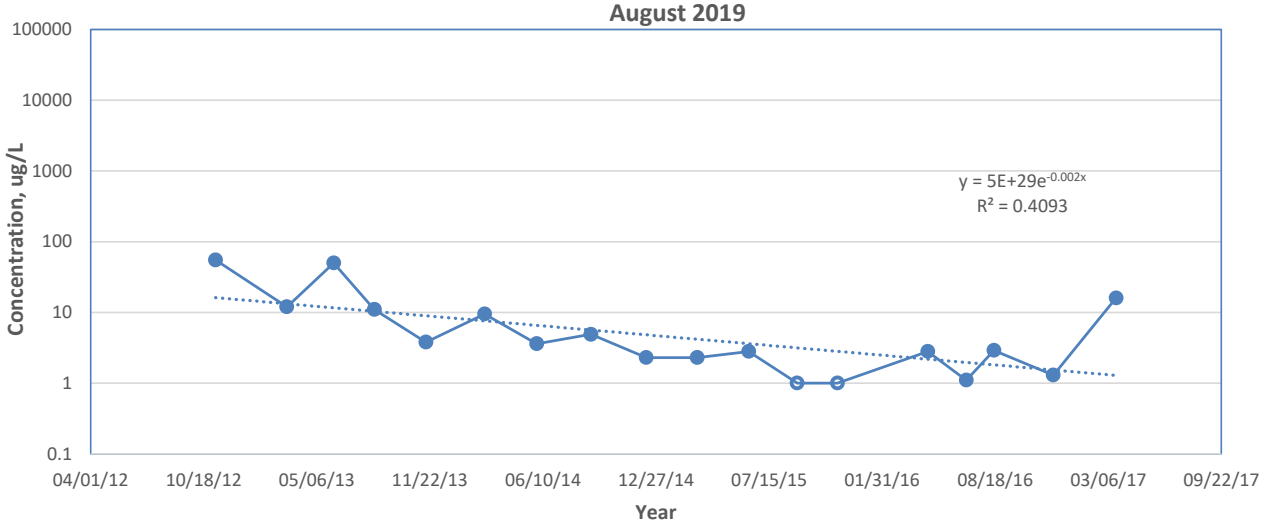


FIGURE A-19
NCW-011 (ZONE A) TCE TRENDS
August 2019

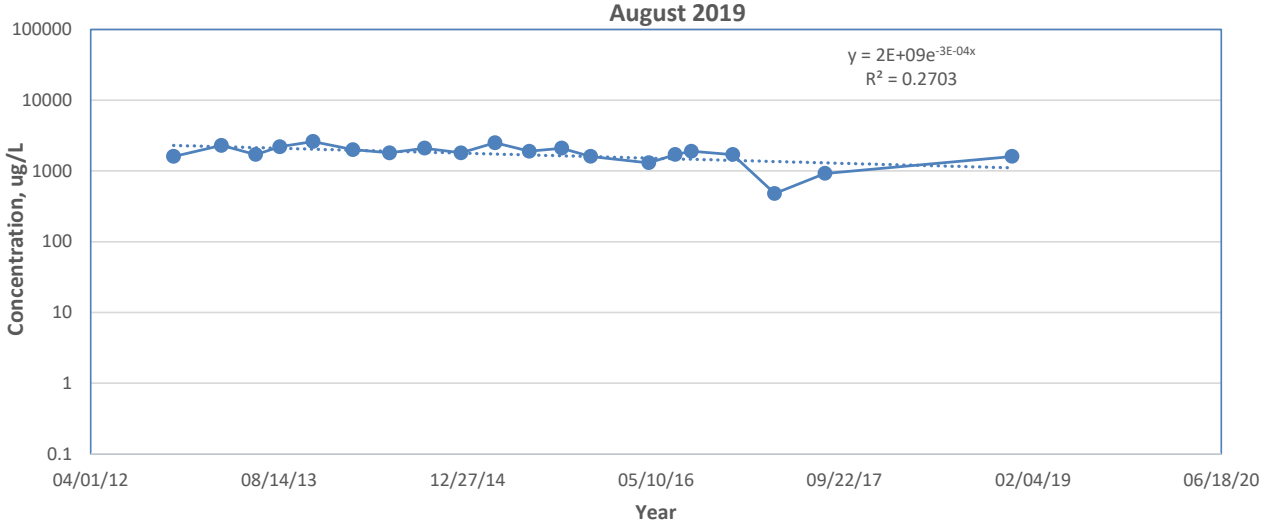


FIGURE A-20
NCW-012 (ZONE A) TCE TRENDS
August 2019

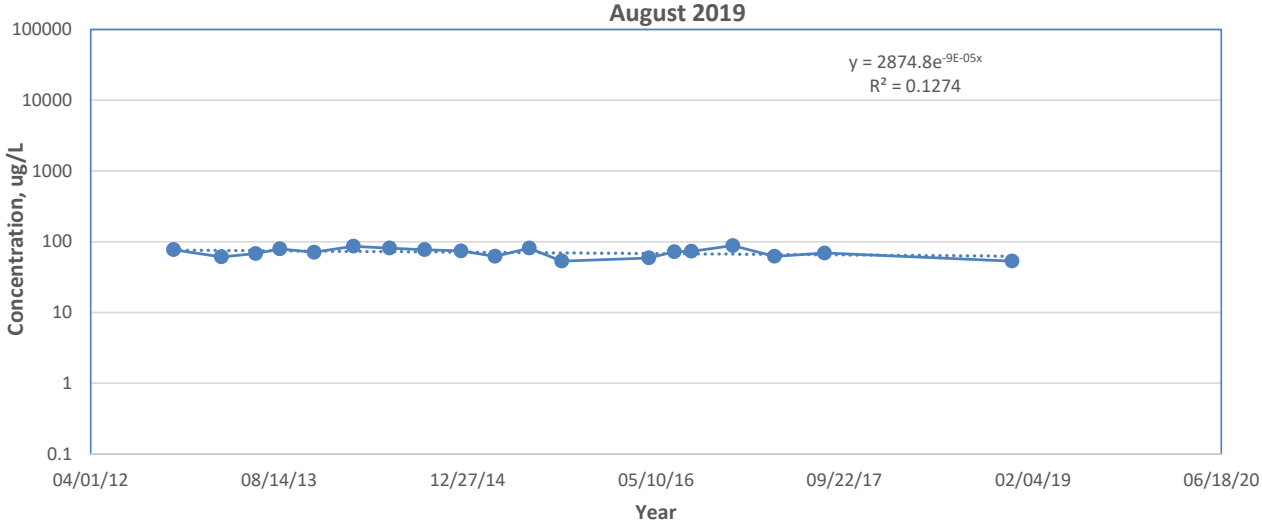


FIGURE A-21
MW-57-1 (ZONE A) TCE TRENDS
August 2019

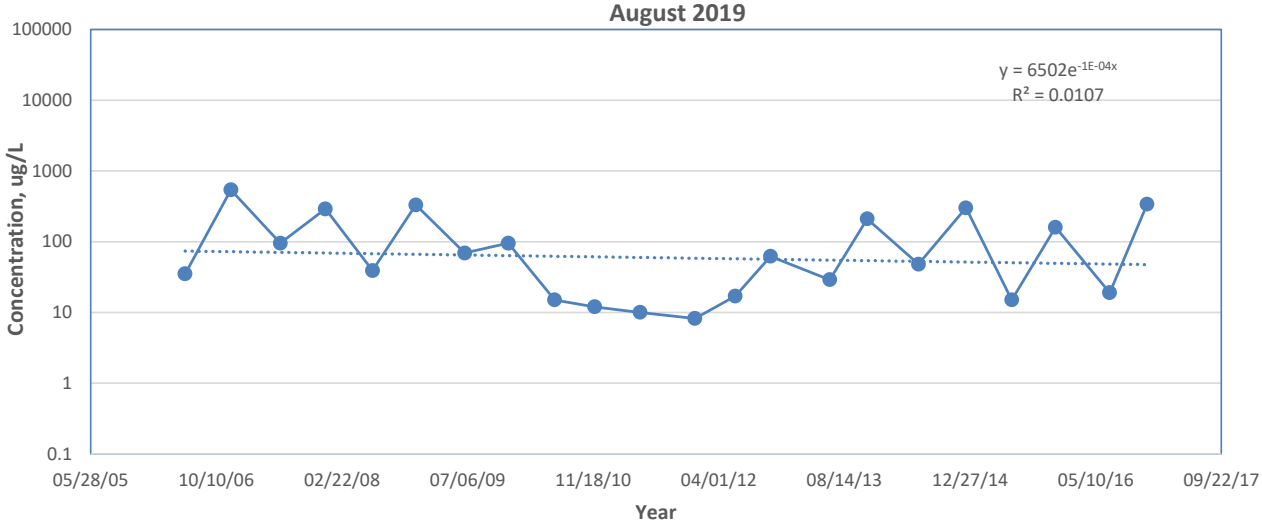


FIGURE A-22
MW-57-6 (ZONE A) TCE TRENDS
August 2019